

AMERICAN

# CINEMATOGRAPHER

The Motion Picture CAMERA Magazine

## this issue

Development of Silent Camera

Language of Color

Process Photography

Riddle Me This

... and other features.

JULY, 1934

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DUPONT  
NEGATIVE



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of motion picture photography

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## Next Month

● W. C. Miller, noted sound engineer of Hollywood, will discuss the 48 cycle Motor as it is used in motion picture making.

● Rumor tells us that 20,000 Leagues Under the Sea will involve much technical ingenuity in the underwater sequences. We will give you some of the low-down on this picture in the next issue.

● The Evolution of Lighting Equipment will be discussed and something will be told about using color on sets.

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THE AMERICAN SOCIETY OF CINEMATOGRAPHERS was founded in 1918 for the purpose of bringing into closer confederation and cooperation all those leaders in the cinematographic art and science whose aim is and ever will be to strive for pre-eminence in artistic perfection and technical mastery of this art and science. Its purpose is to further the artistic and scientific advancement of the cinema and its allied crafts through unceasing research and experimentation as well as through bringing the artists and the scientists of cinematography into more intimate fellowship. To this end its membership is composed of the outstanding cinematographers of the world with Associate and Honorary memberships bestowed upon those who, though not active cinematographers, are engaged none the less in kindred pursuits, and who have, by their achievements, contributed outstandingly to the progress of cinematography as an Art or as a Science. To further these lofty aims and to fittingly chronicle the progress of cinematography, the Society's publication, *The American Cinematographer*, is dedicated.

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John Arnold, A.S.C., inspecting the DeBrie "Super-Parvo" Silent Camera.

## Development

of the mechanism for providing this movement is, it seems, unavoidably noisy, while the movement of the film itself gives rise to a certain amount of sound as well. Moreover, the standards of silence are constantly becoming more exacting, as the sensitivity of recording-equipment is increased. A camera which would have been perfectly acceptable five, four, or even two years ago would be abjectly noisy now that "Wide Range" and "High Fidelity" recording is in general use. Since it is recognized that it takes at least two years to engineer and perfect a studio-type camera to the point where it is ready for production, this constant alteration in silence standards is a very grave handicap.

At present, the measurement of camera silence is expressed as a rating of "minus decibels" that is, its operational noise is of a volume so many units below the level of average speech. Before the introduction of present high-sensitivity recording, a camera with a rating of  $-35$  db would be considered adequately silent. The best of existing "blimps" are rated at  $-40$  to  $-45$  db, which, with modern recording, is barely adequate. According to studio experts, a silent camera must, to meet today's conditions, show a rating of not less than  $-50$  db.

What is actually available today?

Silent camera development has followed two main courses: adaptation of existing equipment, as exemplified in the Fried design, and the creating of absolutely new designs retaining to some extent the features and appearance of earlier models, as exemplified in the Mitchell and DeBrie designs.

The Fried design is essentially a reconstruction of existing cameras — Bell & Howell or Mitchell — in which the silenced camera is placed in a snug soundproofing case, 12x12x12 inches in size. A special focusing system eliminates any lateral shifting for focusing, thereby permitting a much smaller housing. The magazines are not blimped; they are fitted with beaded moulding, to break up any diaphragm effect, and as they are fitted to the outer case rather than to the camera, they do not transmit either noise or vibration from the camera. Several of these units are being used at the Columbia Studio, with excellent results.

The first of the new designs to be offered by a major camera manufacturer was the Mitchell. This was first exhibited (in an experimental model) before a meeting of the American Society of Cinematographers in June, 1931, and described in the AMERICAN CINEMATOGRAPHER the following month. A refined model of the camera was used by Hal Rosson, A.S.C., in photographing "Hell Below" last year and described by him in the AMERICAN CINEMATOGRAPHER in February, 1933. Further refinements have been incorporated in this design, and the camera is now in production and use. It incorporates virtually all of the features of the earlier Mitchell camera, together with a design which tends to minimize noise. The movement is essentially the same as the famous Mitchell "speed movement," but actuated through eccentrics rather than gears. The film-moving claws move into and out of the perforations much straighter and faster than previously, and leave

ALMOST seven years ago, the first "Talking Picture" was released. For at least six years, the motion picture industry has been acutely microphone-conscious, striving to suppress every extraneous noise which might interfere with the recording of dialog. From the start, the cinema camera has been one of the chief offenders in this respect, for the intermittent movement which seems inescapably necessary to cinematography, is an inherently noisy mechanism. The first step in overcoming camera-noise was, of course, altering such obviously noisy parts as gears, bearings, etc., and insulating the camera itself by encasing it in a sound-proof housing. These housings — known variously as "blimps" or "Bungsiks" — have progressively diminished in size and increased in sound-absorptive efficiency, but they still interfere to a greater or lesser extent with the free and facile operation of the camera.

For at least five years, Cinematographers everywhere have been seeking a really silent camera — one which can be used, uncovered, with any sound system, under any conditions, restoring the full freedom and flexibility enjoyed in the pre-Vitaphone days. For five years, rumors and unverifiable reports have come from engineering laboratories, telling of intensive work being done in developing such cameras. From time to time, improved cameras have been shown, or experimental silent cameras tested. Surely the silent camera must be "just around the corner," despite the tight-lipped silence of the engineers and manufacturers. Yet the months have rolled by, and no such camera has appeared. Cinematographers everywhere are asking, "Where is the Silent Camera? When will it be ready for use? What manner of machine will it be?"

Properly to understand the answer, we must first appreciate the problem facing the designer. The operation of a motion picture camera is based on the use of an intermittent movement which allows the film to remain motionless during the exposure, then quickly moving onward to reveal the next section of unexposed film. The operation

# of Silent Camera Progressing

by

William Stull, A.S.C.

the film at rest for a rather longer period, with a faster pull-down. A series of rolling rollers through which the film is threaded tends to minimize the film-slip. A manually adjustable shutter is provided, with a visible indicating-dial at the rear of the camera. The customary four-lens turret is retained, as is the familiar Mitchell focusing-system. The finder is interconnected with the focusing movement of the lens, through a series of cones, so that the finder is focused and compensated for parallax automatically as the lens focus is changed. The motor-mount is integral with the right-hand cover of the camera; motors may be removed or interchanged by loosening four screws and removing this plate. Silence is secured by a layer of cork insulation between the double walls of the camera-case, and by rubber insulation preventing metal-to-metal contact between the camera and magazines, tripod, etc. As Mr. Ranson wrote at the time, this camera is satisfactorily silent for most work except extreme close-ups, or scenes recorded at a very low volume-level.

Recently, an improved model has been undergoing practical tests at the hands of Victor Melner, A.S.C., who used it on "Cleopatra," and Karl Struss, A.S.C., who used it on several sequences of "It Ain't No Sin." This latest model is essentially the camera just described, with some minor changes such as the addition of an automatic dissolve, encased in an extremely compact outer housing, which insulates the entire camera acoustically. All controls—such as dissolve, shutter-adjustment, frame and footage counters, and focusing throw-over—are extended outside of this casing, so that the device need be opened only when threading the camera. The magazines are enclosed in a double, hinged cover, wide enough to allow for their movement in focusing. The turret, however, has been dispensed with in favor of a single-lens design, with the lens mounted on the outer case. The focusing control is through a lever and scale at the rear of the camera, and lens and finder are interconnected as in the previous design. An interesting prism arrangement permits the Operator to view the focus-collimators on the lens from the rear of the camera. The matte-box is hinged, and swings out of the way horizontally, to facilitate changing lenses. While larger than the regular timers, this device is still far smaller and lighter than any type of "blimp," and is said to show an excellent sound-absorption record.

A similar device, experimentally produced by the RKO Studio, was recently described in the AMERICAN CINE-

MATOGRAPHER. In this case, the camera used was, of course, a "silenced" model of the pre-talkie Mitchell, and the housing was leather-covered rather than metal.

Last spring, an experimental model of the Bell & Howell silent camera was shown in Hollywood. Externally, this model was a complete change from all previous Bell & Howell practice, though closer inspection revealed the fact that it centered around a silenced version of the famous Bell & Howell Stationary Pilot-Pin movement. As described in the AMERICAN CINEMATOPHOTOGRAPHER in March, 1933, this camera is of box form, roughly 10x12x18 inches in size, with standard Bell & Howell 1000-ft. sound-proofed magazines on the top. The casing is double, with the inner casing which carries the movement literally "floating" inside the outer one. Both cases are sound-proofed. Much of the internal gearing customary has been eliminated, and what remains is made of noise-reducing materials, and in some instances cut most unconventionally. Direct drive is obtained through a built-in 48-cycle motor, whose armature is an extension of the camera's shutter shaft. The movement is a refinement of the Bell & Howell pilot-pin movement, silenced, of course, and film-slip is reduced by reducing the size of the loaves and by the use of two main sprockets instead of one. The shutter is manually adjustable. A single-lens type of mount is used, the lens being fitted in a universal mounting, and placed in the outer case. The design of this mount pre-selects the proper cone for both focusing and finder-correction movements, so that a single scale is used for any lens or lenses. This scale, and the focusing control, are at the rear of the camera. Focusing is secured by an ingenious design in which the movement is moved slightly backward, while a ground-glass focusing screen and a system of reflecting prisms are inserted. The image is reflected across the camera and to the rear, where it is seen right-side-up and magnified.

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The newest Mitchell Silent Camera



# The Language of Color

by  
L. O. Huggins, A. S. C.

IN PREVIOUS articles we have considered the "Language" of Line, Tone and Design, with the idea of showing how the lines and tones in a still or motion picture may emphasize the mood or emotion of the scene to enhance the values of the story. There yet remains another "Language" of great importance, and that is—Color.

Imagine yourself standing on the Mahave Desert watching a flaming sunset. The red sun is sinking behind gold and orange clouds. The purple hills are tipped with crimson—a thrilling sight.

Again imagine yourself beside the shore of a mountain lake where the water is green, and violet mist fills the hollows under the blue-green pine trees—a restful picture.

Perhaps you do not realize how much these colors affected you. Certain hues in the sunset thrilled the feeling of excitement, other colors in the mountain lake gave you the feeling of peace and rest.

If you had seen the sunset, devoid of color, in varying shades of grey, you would have felt little elation from its spectacle. If the colors of the mountain lake were changed by some magic into the flaming colors of the sunset, you may be certain that your feeling of peace and calm would have disappeared instantly.

The total absence of color also has its effect upon you. Can you imagine living in a house which is painted black inside, with grey furniture, and not a single spot of color to break the monotony? You could not live happily in such surroundings of somberness and gloom.

To show the importance of color in our daily life, let us picture a world without color. A white sky, grey hills and foliage, black rocks and tree trunks,—and as for ourselves,—light grey faces and grey clothes. It would be a drab world. Now add color, and the whole scene takes on life and vitality. Golden sunlight greets us as we step out of doors, the green of fields and trees cheers us with its freshness, the violet shadows soften the outlines of the hills. Whether or not we realize the fact, all colors have a definite effect upon us.

With the interest being shown in color by the producers at the present time, and with the knowledge that in the very near future, full-length features in color will be the rule rather than the exception, we feel that this is an appropriate time to discuss the "Language" of Color.

But first let us consider some of the properties of color. The first is "Hue." This is the effect on the eye of a specific wave length of light which results in the impressions we have named Red, Orange, Yellow, Green, Blue, Violet, Purple and Magenta. The term "Hue" has nothing to do with the brilliance or brightness of a color. For example,

## VOCABULARY OF COLOR

HUE	EMOTIONAL REACTION	MEMORY REACTION
Red	Aggression, triumph, war, passion, hot	Flame, blood, war.
Pink	Love, happiness, joy, youth, domesticity	Babies, roses
Orange	Jolly, energetic, sometimes the sun	
Gold	Generosity, proud, powerful	Money, riches, palaces.
Brown	Conservative, sober, war	The earth.
Yellow	Cheerful, gay, light, frolic, mischief, treachery	Sunlight, daffodils.
Green		Leaves, moss, outdoors.
Blue-green	Essence, mysterious, women, sea, ponds, jade	
Blue	Serious, noble, free, steadfast	Sky, ocean.
Violet	Dignified, serious, potent, warlike	For hills
Purple	Regal, beautiful, mysterious, exalted	Amerliot, "Royal Purple"
Magenta	Shiny, theatrical, light, pure, mischief, powerful, sleek	Babies, roses, scarlet
White		Snow, "flag of truce," angels
Grey	Shady, retiring, judicious, intellective	Rainy days, old age, mist, ashes
Black	Serious, impassioned, dignified, sophisticated	Death, funerals, night, evil, snow

Colors mixed with white	Youth, gaiety, informality.
Colors mixed with grey	Subtle, refinement, shrew.
Colors mixed with black	Strength, seriousness, dignity.

light-blue, slate blue and navy blue all exhibit the same hue. The next property of color is "Value." This term refers to its lightness or darkness. Light-blue is a high value, because it reflects a high percentage of light, slate blue is a medium value, navy blue is a low value because a very small amount of light falling on this color is reflected back to the eye. The third property of color is "Chroma" (technically termed Saturation) which indicates the purity of a particular hue. A brilliant red is of a high chroma, a brick-red a medium, and a reddish grey is of a low chroma. The nearer a color approaches grey, that is, the less pure it is,—the lower is its chromatic value.

White, grey and black are, strictly speaking, not colors as they exhibit no predominance of a specific wave length of light, but we shall include them in the "Language" of Color.

Each color in the spectrum has its effect upon us. It may be restful or otherwise, according to its hue, value and chroma. Colors also suggest to us certain objects and emotions. Red, for instance, intensely shouts at us. It is an energetic and aggressive color, at times brutal and angry. Whenever we see a brilliant red color we are reminded, consciously or subconsciously, of fire, blood, war, passion.

Orange is another active color, it is gay and jolly, suggesting ambition and progress.

Gold is ostentatious, proud. The "language" it speaks is very definite. It always reminds us of money, riches, palaces.

Brown is conservative, sober, and reminds us of the earth.

Yellow is a cheerful, bright color, reminding us of light, sun, spring flowers.

Green is a doing, vigorous hue. It is youthful, hopeful, free. It is associated with vegetation, woods, fields, spring and summer, the out-of-doors and freedom.

Blue-green is much more sedate. It is exotic, mysterious and suggests the sea, pools of water, peacocks, jade, turquoise.

Blue always reminds us of the sky. It is noble, pure, loyal, steadfast.

Violet is serious, solemn, potent, sometimes mystic, melancholy.

Purple is pompous, gorgeous, triumphant, regal, being

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A set from "Wipe Out."  
Note marble walls and stenciled parquet floor.

## The Part of the Painter

by

Oliver T. Marsh, A. S. C.

THE most successful motion picture Scenic Artist must not only work in close co-operation with the Cinematographer, but he must have an accurate and extensive knowledge of photography as it affects his work. He must know very accurately the photographic values of color—of different pigments and different materials. The chemical composition of different pigments of the same visual color may often produce vastly different photographic effects, due to different degrees of light-absorption. Similarly, identical pigments applied to different materials, such as wood, cotton, silk, wool, velvet, plush, composition board, or foliage, may produce entirely different photographic results. These facts, and many similar ones, must be at the finger-tips of the successful Scenic Artist.

Virtually every type of material and paint is used in motion picture work, for he is at one time or another called upon to duplicate every conceivable type of structure. In doing this, he has to apply virtually every type of paint known—including standard oil paints, water-colors and kalsomines, enamels, gold and silver leaf, stains, varnishes, lacquers and plaster-stains—to virtually every conceivable surface: wood, metal, wall-board, plaster and cloth. Moreover, he is as a rule working against time, necessitating the use of the fastest-drying paints possible, often with artificially-accelerated drying. At times, as rush orders, he has had to have a set painted, dried and ready for use within half an hour—and he rarely has more than three hours to allow for drying. The use of quick-drying lacquers, with spray-guns and electric fans and heaters is a great help in this. A vitally important factor in the operation of the Scenic Painting Department is the fact that all of the stages of the Metro-Goldwyn-Mayer studio are supplied with gas, water, electricity and compressed-air lines.

With the coming of sound-film, the technique of set-construction in many studios had to undergo an abrupt change, and the technique of the Scenic Painter had to change with it. Since the early days of crudely-painted canvas drops, motion picture sets had in many instances been constructed out of hard materials—usually wood or

plaster—treated in much the same way as the rooms they were made to represent. This construction, however, proved unsuited to sound, as the solid walls reflected the sound-waves, giving rise to reverberation and bad sound. Therefore, in many instances, a change was made to acoustically porous construction. At MGM, however, we were fortunate in that we had for some years been using soft sets, which we had found to be highly advantageous from every viewpoint, the construction remains virtually unchanged. With the exception of the relatively few sets representing wood-paneled walls (for which we use grained veneer panels) we use cloth construction over wooden frames. As a rule, the cloth is muslin, stretched tightly over rigid wooden frames. This construction is light and inexpensive, and makes it possible to move the sets around the studio without fear of breakage, cracks, etc., as the construction is resilient. The sound-waves pass directly through the cloth, making the sets so built acoustically ideal.

With this construction, we found ourselves faced with the problem of duplicating wallpapers, etc., without sacrificing the desirable qualities of the soft set-construction. Covering the muslin walls with actual wallpaper would not be practical from any viewpoint; accordingly, in place of the plain, unbleached muslin, we use patterned fabrics such as calico, chevrons, gingham, and the like, sewing the sections together so that the patterns are joined, as they would be in wallpaper, and stretching the fabric over the set-frames in the usual manner. In some spectacular pictures, such as "Rescue in the Desert," we utilized expensive brocaded silks, etc., for this same purpose, although the actual cost per yard of these materials is high, we found that—especially since the bolts of such stuffs are unusually wide—the actual cost per foot of such treatment made it the most inexpensive possible method of producing the desired effects.

Many sets require marble panels in either the walls or flooring; the cost of real marble would be prohibitive, as would the problem of shipping it to the requirements of the set, and many other problems of a kindred nature. Many years ago, Ernest Tate, head of the MGM Paint Department, originated the use of "marbled" paper for this

Continued on Page 116

# Production Economies With Process Photography

by  
Walter Blanchard

THE "PROJECTED BACKGROUND" process of composite photography, known also in some studios as the "Transparency" and "Photo-Image" process, is generally recognized as an invaluable aid to modern production. It is admittedly a great convenience, permitting the photographing and retarding of many scenes which would otherwise be difficult, dangerous, or actually impossible if filmed by conventional methods. The economic value of the process, however, is not recognized so generally save in the more sensational instances where the use of the process eliminates long and expensive location-trips. This is natural, as studio departmental cost-accounts are seldom published or discussed, and, moreover, the economies of such a department rarely appear in such reports, which simply detail actual costs rather than savings (actual or estimated) over other methods.

The writer was recently privileged to study the fiscal report of the Process Department at one of the major studios—a report which proved a revelation of the volume and importance of "projected background" work. For the year 1933, the schedule of this studio called for the production of 58 feature pictures. Of these, some six were "Westerns," made almost exclusively on location, with very few studio-made scenes, and little or no need for any type of composite photography. Of the remaining 52 productions, 51 required the services of the process staff to a greater or less extent, utilizing a total of 658 process shots—an average of 12.9 shots per production. Two of these films were definitely out of the ordinary run of productions: one was decidedly a "trick" film and required 112 process shots (entirely aside from many miniature, "glass" and optical-printer shots), while the other was an aviation story, with many aerial sequences which could hardly have been filmed in any other manner, and used 72 process shots. Eliminating these two out-of-the-ordinary productions and their 184 process shots from our calculations, we find that among the normal productions made by the studio, there were 49 productions using 474 process shots—an average of 9.7 process shots per production.

At this point, it may be well to define what is meant by "Process Shots," as the term is in itself rather misleadingly brief. Essentially, the process consists of the use of a translucent screen of large dimensions as a background for action photographed in the studio. Any type of foreground set may be erected in front of this screen, and any type of action staged. Upon the screen is projected (from behind) a strip of motion picture film, supplying any desired background—moving or stationary. The projector and the photographing camera are electrically synchronized, so that their shutters open and close in unison, with the result that the image cast by the projector is photographed as a background to the actual action taking place in the foreground.

Hence the names, used in some studios, "Transparency" and "Photo-Image." Earlier developments of the process, based on the color-sensitivity of panchromatic film, and utilizing a colored background-film which was run through the camera and printed upon the final negative by colored light reflected from a colored backing illuminated by colored light (usually blue), with the foreground set and action illuminated by light of a complementary color (usually orange-red), are known as "Color-Separation," "Blue Transparency," and "Dunning Process" shots. This method is still used to some extent, though largely supplanted by the more flexible, quicker-operated projection-type shot.

A brief mention of the average costs of process work over a period of years is illuminating, as it shows, with the increase in the volume of work and the enhanced experience and resources of the process staff, the making of such shots becomes steadily cheaper, while their use becomes more effective.

In 1930—the last year in which this studio used the color-separation process—146 process shots were completed for 40 productions, at an average cost of \$314.95 per shot.

The next year—1931—the department standardized on the present type of projected-background shot, and made 340 shots for 33 productions, lowering the average cost to \$184.61 per shot.

In 1932, 503 shots were made for 45 productions, the cost averaging \$140.59 per shot.

Last year—1933—the same department made 658 shots for 51 productions, at an average cost of \$116 per shot.

These figures are stated to include all departmental expenses except the items of lighting, set-construction, film-costs and laboratory-charges, which are figured separately for the entire studio over the period of a year, and prorated to each production rather than to departmental budgets. During the 296 working-days of the year, the special-process department completed on an average of three shots per working day.

In this four-year period, the average cost per shot had been lowered by two-thirds—an actual reduction of nearly \$200 per shot. How was this done?

In the first place, of course, the volume, which increased somewhat more than 350 per cent, would in itself materially reduce the average cost. However, the most vital factor is the fact that during these years a large library of background film has been built up. Each background that is photographed is immediately classified and filed away for future use. A cross-indexed card system permits the Department Head to locate immediately any desired background, and a separate file of clippings from these scenes enables them to judge at once the exact nature, angle, composition and quality of any background in the library, as well as enabling the staff to give the director or producer an idea of the backgrounds available for any given scene or action without having to waste valuable time screening reel after reel of backgrounds. In the majority of instances, thanks to this library and its indexes, it has been possible to use background already made rather than going to the expense of photographing new ones. Of the 658 process shots made last year, 308 of the backgrounds were found, already made, in the library. Eliminating the "trick" film already referred to, which required that every one of its 112 process shots be from a specially



A shipboard scene made on the process-stage; the water, hull and sky background being supplied by the process screen.

made, original background: we find that out of 546 process shots made for normal productions, 310 backgrounds came, ready-made, from the library, and only 236 had to be specially made. Many productions required the making of no special backgrounds whatever, the special one story mentioned, for instance, used 72 process shots, and required but seven new backgrounds: the remaining 65 were found in the Department's library.

But just how do such shots aid in production economies? It is of course obvious that in films which, like "King Kong" or "Alice in Wonderland," depend for their making upon trick photography, they are invaluable, and that in many types of serial and thrill stories they enable the making of scenes which would otherwise be impractical, or even dangerous. Photographic technicians will also appreciate that such scenes as moonlit night-effects, made with filters, are most satisfactorily handled by this method. Scenes in moving trains, buses, taxicabs, and the like benefit from the use of projected background shots, as they would in actuality be very difficult to photograph well, and would present almost impossible conditions for sound-recording. Scenes which require the principal players to appear in foreign lands naturally demand process shots if they are to be made economically. But there are many scenes and sequences which could well be made in the normal manner, yet which are made on the process stage: why is this done?

Either because, by using the background-projection process, the scene can be made more effectively, or because it can be done more economically. Very often, both

factors enter the problem. For example: a recently produced film contained a sequence played on a lakeside, with the characters canoeing. It would be entirely possible to transport the entire company to a suitable lakeside, and film the sequence in the normal manner. But too many economically hazardous factors entered into the problem: the sequence was long enough to require at least a normal day's shooting on the location, with more than two and a half pages of important dialog to be recorded, such a location is always at the mercy of the vagaries of the weather—light and atmospheric conditions hamper the cinematographer, while wind, water-noise, etc. hamper the sound engineer. These factors in themselves might very conceivably so hamper the company as to stretch the single day's work into two days, or even more. There is also the important item of transportation, wasted travelling-time, and very likely of housing the company over one or more nights. At the very least estimate, it would require an unusually long and full day's work to film the sequence on the actual location—and it would be a tedious day's work, starting very early in the morning, and lasting till late at night. It might even prove cheaper to move the company to the location the evening previous, having them spend the night (and possibly the following one) at some hotel, in order to gain more actual working time on the location.

Filmed in the studio, by the projected background pro-

Continued on Page 115



# RIDDLE ME THIS

**The Riddle:** It has been suggested that the development of a really silent camera would be made easier if the standard taking and projecting speed were reduced from 24 frames per second (the present standard) to 20, 18, or even the old standard of 16. What is your opinion?

**WILLIAM A. REES, A.S.C.:** I do not believe that any appreciable advantage would result from such a change. At the present speed, we get a smoother picture, and while the slower speed would probably enable us to crowd more action into a given footage, this is offset by the present technique of direction and cutting, which makes for a quick tempo. Moreover, if the speed were reduced, the sound-quality would suffer far more than could be offset by any gains in camera-silence.

**JOSEPH AUGUST, A.S.C.:** I don't see that anything worth while would be gained by such a change. You must remember that in the old days, before sound was thought of, even though the "standard speed" was 16 pictures per second, most of us were shooting at 20 or 24, in order to get a smoother picture and to compensate for the way the theatres used to crowd the pictures through. When sound came, and forced both cinematographers and exhibitors to standardize on the present 24-frame speed, it was a distinct advantage.

**DWIGHT W. WARREN, A.S.C.:** I don't believe it would be worth while. The present standard of 90 feet per minute seems ideal from every viewpoint. Also, it is not unduly fast. I recall that before sound came we nearly always photographed at about this speed, and, in a survey I made of projection in our studio (Educational) and a number of local theatres, I found projection-speeds varying from that up to 105 feet per minute. I think the present speed is entirely satisfactory, and that there could be no appreciable gain from reducing it.

**JOHN O. AALBERG, Chief of Sound Projection, RKO Studio:** I don't see that there would be anything gained by such a change—and much would be lost. The cost of making such a change would be tremendous and any gains made in reduced camera-noise would be more than offset by losses in sound-frequency. Personally, I have always regarded the present 24 frames per second speed as an ideal compromise.

**FREDERIC McALPIN, Head of Sound Dept., Heunes-ling Studio:** I can't see any benefit in such a change, and several definite drawbacks. It is well known that most of the noise comes from the intermittent movement; now if we reduce the speed at which this mechanism operates, we will actually tend to increase the camera-noise problem, for the sound will be broken down into a series of distinct clicks. From the sound technician's viewpoint, the ideal (as long as we must have the noise-producing intermittent movement) would be to speed the action until the sound becomes

a sustained hum, which we could "cancel out" much more easily than we could eliminate the clickety-click of a slow-working intermittent.

**HAROLD MARZORATI, A.S.C.:** Such a change would be tremendously expensive, and, so far as I can see, of little practical benefit. In my experience with high-speed cameras, I have noticed that a properly designed camera varies little in the amount of noise it makes, regardless of speed. The speed cameras used in trick work make a good deal of noise, of course, but if the noise is analyzed, it will be found that by far the greater part of it comes from the gear-boxes used to speed the movement up to eight or ten times normal speed, and that the camera itself makes little more noise at 240-frames than at 24. The problem, therefore, seems one of camera design rather than of speed.

**ROY OVERBAUGH, A.S.C.:** I see very little against such a change, and many possible advantages. Outside of the initial expense of making the change, it seems to me the result would be clear profit. It is very probable that a slower-running camera could more easily be made silent, and aside from that, there would be considerable savings in film and the like.

**STANLEY CORTE, A.S.C.:** Regardless of speed, noise is noise—and a camera that is noisy at our present speed of 24 will scarcely be less so at 16. On the other hand, a camera which is satisfactorily silent at 16, should be just as quiet at 24. It is simply a problem of evolving a design or principle which will give us accurate operation without noise—and sooner or later, I'm sure the engineers will do it.

**JEROME ASH, A.S.C.:** Reducing the speed ought to help. Most of our present cameras were really designed to operate at 16 frames per second, and the present speed of 24 is really over-running them considerably. In the process, a good deal of noise and vibration are developed. Of the two, I believe the vibration is the worst offender. If a really efficient method of insulating the cameras so that this vibration would not be transmitted to the tripod, and so to the floor, could be developed, I believe we would be a lot closer to the really silent camera.

**GEORGE MEEHAN, A.S.C.:** I don't believe the speed has much bearing on the case. A camera that is silent at 16 should be just as silent at 24. Besides, the cost of such a change would probably be prohibitive.

**WESLEY C. MILLER, Chief Transmission Engineer, MGM Studio:** In my opinion, a speed of 20 frames per second would be an ideal compromise. It would economize on film, and give the cameraman more exposure, at the same time, it would not affect the sound-quality: true, it would cut off some of the higher frequencies—but but the cut-off would be well above the range now being utilized. With such modifications as changes in the frame size and positioning, which have been proposed, we could get a much more economical utilization of the film-plate, thereby saving enough to go far toward offsetting the cost of the change.

Continued on Page 120

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# Sound-on-Film Technique Recording for 16mm.

by

**Dr.-Ing. Hans Atorf**

Research Engineer, Tobis-Klangfilm, G.m.b.H., Berlin

THE long-desired substandard sound-on-film talking picture, to serve as a companion to theatrical films, but for Industrial, Educational and Personal uses, is at last materializing. In Germany, as elsewhere, the most popular substandard film size is 16mm wide, with perforations on both edges. This format is retained for sound-on-film use, but by perforating only one side, we have left an area, hitherto utilized by the perforations, suitable for carrying a sound-track 1.65mm wide. This immediately offers an improvement over professional sound-on-film practice, which could not sacrifice the perforations, and was forced to diminish the picture-area to accommodate the sound-track. In the professional standard, it will be recalled, the film is 35mm wide overall, with a sound-track 2.45mm in width of one side of the picture, between it and the perforations.

Both of the methods professionally used for sound-on-film recording may be used for substandard recording. Both the Variable Area and the Variable Density types have been tried, but in Germany the Variable Density method has been given preference. (Note: This is exactly opposite to American practice, where Variable Area recording dominates the 16mm field. Ed.)

With either type of recording, the film-speed used in substandard practice is lower than is the case with standard film, being only 18.3 cm. per second against 45.6 cm. per second with 35mm. As a result, the striations comprising the recorded sound waves are placed much closer together than in the larger size. A note of 437 cycles per second ("A") for instance, recorded on standard film gives a wave length for separation between alternate dark or light striations) of:

$$\frac{45.6}{437} = 0.105 \text{ mm}$$

while the same sound recorded on 16mm. has a wave length of only

$$\frac{18.3}{437} = 0.042 \text{ mm}$$

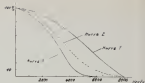


Fig. 1 Influence of slit width, Curve 1, slit width of recorder, 0.023mm; Curve 2, slit width of reorder and of projector, 0.023mm; Curve 3, slit width of recorder, 0.023mm, of projector, 0.030mm.

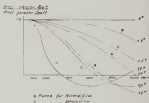


Fig. 2 Influence of Deviation of the slit Area on straight position



Fig. 3 Recording power of film material relative to frequency range.

To express it more simply, the distance between two striations recorded on 16 mm. film is the same for 8000 cycles as it is on 35 mm. film for 2000 cycles.

This naturally results in a considerable series of difficulties.

Both recording and reproduction of sound-on-film records is done through a slit of definite width. With increasing frequencies, the slit width causes a linear distortion of the recorded amplitude, in such a way that, eventually, the slit width may become equal to the "wave-length" between two striations, thereby cancelling out the sound impulse, in such a case, if recording, no sound would record, or in reproducing, nothing would come from the loud-speakers.

For example, if the slit width in a recorder were equal to 0.023mm, a frequency of 8000 cycles could not be recorded. (See Fig. 1, Curve 1.)

For both optical and physical reasons, it is impossible to use a slit smaller than 0.01 to 0.012mm, and even such a

Continued on Page 119



# TREND of THE TIMES

## Electrography

● A new departure in photography without a camera is termed *Electrography*, according to "Comens," a magazine published in Germany. It is claimed some wonderful results have been obtained with this new method. In many instances it is proving of wonderful help to advertising men. Designs and patterns are created by placing metallic objects of some sort, such as paper clips, pins, etc., on the emulsion of either paper or film. This of course takes place in a dark room.

By connecting one of the metallic objects to an electric wire a shock goes through the pin or whatever is placed on the plate. You cannot see the rays with your eyes, but they affect the emulsion. After developing the plate shows all of the little electric rays or halation, or whatever you may want to call them, are photographed and usually create a very weird and interesting pattern.

## Distortograph

● An English invention, the *Distortograph* lens, according to the *British Journal of Photography*, is receiving considerable attention from international cinematographic publications. It is claimed this lens is based on an entirely new principle and is very easily attached to any existing lens mount. The effects secured with this lens are said to be very humorous. It is the contention that English producers are considering short comedies produced entirely with this new lens.

## Colored News Reel

● The *Colored News Reel* is at last a reality, according to "Lichtbildbuehne," a European cinema publication. It is claimed a well-known British news weekly will present their entire newsreel in color. The color process used is reported to be the *Dufay* system. The advantages of this process are claimed to be in the fact that no special equipment is needed by the cameraman.

## Flickering Stars

● During the filming of Harold Lloyd's latest picture, "Cohet Pow," the cameraman used his ingenuity to obtain the effect of stars flickering in the sky.

Little sheets of foil were attached by one corner to a large board. These pieces of foil covered the entire board in front of this a glass the same size as the board was placed. This glass was painted black with a myriad of small holes in the black paint. When the lights were placed on the foil only and a fan turned on so that they fluttered in the breeze, the effect of blinking stars was secured on the film.

## Esperanto Talkie

● Claiming there are millions of people in this world who speak and understand the international language, *Esperanto*, a Belgian producer is said to be making a propaganda picture in which the entire cast will speak *Esperanto*. It is the contention that by reducing the dialog to a minimum even those who do not understand *Esperanto* can intelligently follow the story by observing the action.

## Filming Famous Paintings

● According to "Le Cinéopie," a French photographic publication, the government of France is making a series of propaganda shorts showing the contents of the world famous Louvre Museum. Seemingly there is a possibility of making these shorts in color.

As everyone knows the Louvre is filled with art treasures and by this means many people who would never have a chance of visiting this historic place will have an opportunity to view many priceless works of art.

## Official Fire Films

● According to a French publication the *Parisien Fire Brigade* has been furnished with a motion picture production department. It is the duty of this department to make a complete record of all major fires. The records thus obtained are used for reports and training recruits. It should be mentioned that the *Parisien Fire Brigade* is a military organization and a part of the French army.

## Director Turns Inventor

● When a motion picture director turns inventor, that's news. Karl Lomax, a well-known European director, invented a new color process which is thought to be based on an entirely new principle. What this principle is the "Lichtbild-

uehne," a German publication, does not say, but the publication speaks very enthusiastically of the system and promises technical data in a later issue.

## Are They Silent?

● Recent reports of new bionics, new methods of silencing cameras, in America, brought forth sarcastic comment from some of the foreign cinematographic press. However, tests made in America of some foreign cameras prove that they are not on a par with American made cameras which do not claim silence. Again a foreign paper reports absolute silence. We shall see.

## Sculptured Images

● An alleged new process for obtaining a sculptured image through motion pictures is credited to Japan, according to *Popular Mechanics*. History will undoubtedly show that a gentleman by the name of W. Englemann of Chicago invented the same process several years before the Japanese system.

This system consists of a rotating motion picture camera that takes about 400 images of the sitter in a few seconds.



The actual bust is carved out by a photographic arrangement that follows the outlines of the image. The only difference, according to some authorities, between the Japanese and the American process is that the former enlarges the images, cuts them into strips and then mounts them together.

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## DEVELOPMENT OF SILENT CAMERA PROGRESSING

Continued from Page 107

The most recent to appear in Hollywood is the DeBrie "Super-Parvo," which has already found favor abroad. Following traditional DeBrie practice, this camera is box-form, with internal 1000-ft magazines; it measures 19 1/2 x 14 x 10 1/2 inches. The principal elements of the standard DeBrie mechanism have been retained, including an automatic dissolving shutter, which operates in 4 1/2 feet, with a device by which the film can automatically be rewound 72 frames for lap-dissolves. Focusing is through a tube passing through the center of the camera, between the magazines. It is possible to focus directly on the film, to method much favored by European cinematographers, or to follow the action on the film during the shot. For ground-glass focusing, the operation of a small lever slides the film and gate to one side, while an accurately-placed ground-glass screen slides into place. The movement includes pilot-gears and an intermittent pressure-plate, while the main winding-gears are silenced, and run in an oil bath. The lens-mount is the standard DeBrie type, protected and sound-proofed by a hinged optical-glass cover. The motor is placed inside the camera, between the magazines. Several of these cameras are in use in Eastern studios.

From abroad come further reports of progress toward silent cameras. Georges Sennot, A.S.C., writes very encouragingly of the "Eclair" silent camera, which he has used on several productions, while the "Cinephon" camera, made in Czechoslovakia, is also said to be excellent. But it remains for a German inventor, whose name, unfortunately, has not reached us, to experiment with an entirely new idea in camera construction. His design is entirely operated by vacuum? The intermittent movement is replaced by a vacuum drum (probably similar to that used in the Reagan-Day Synchronizing Machine recently described). This drum is pierced with a series of tiny holes, and contains an automatic valve which applies and releases the vacuum, so that the film is held in place by suction, and so moved, then released during the exposure. It is claimed that this method is sufficiently strong to permit operation at speeds up to eight and ten times normal. As the actual driving force of the camera is compressed air, the camera itself should be extremely quiet, nothing is known about the method of synchronization, or air-supply, however, though it is stated that the exhaust is practically noiseless. It is understood that this camera is now in the course of construction. Certainly, it opens up a

promising new field for silent-camera research.

Silent-camera development, therefore, is obviously not at a standstill. It is progressing—behind locked doors, perhaps—but still progressing. It is beginning to emerge from the laboratory stage to that of practical, studio tests. From there it is safe to predict that it will, before long, reach practical fruition. The progress thus far revealed is really gratifying, in view of the fact that the requirements have been constantly changing as sound-recording equipment and technique advanced, and likewise in view of the fact that for nearly four decades the prime consideration in camera-camera design has not been silence, but operating efficiency. Any one of the cameras described would be satisfactory for all purposes only a short time ago, and with the intensive research now going on in the manufacturers' laboratories, these existing designs should soon receive the final impetus needed to give us the desired, truly noiseless camera.

### The Part of the Painter

Continued from Page 109

purpose—a development now universally used in all studios. This "marbled" paper is produced by floating paint, on a tank of water, and floating the sheet of paper over this. As any school boy who has tried the experiment knows, if the paper is properly handled, when removed and dried, the result is a pattern virtually indistinguishable from real marble. This paper is applied like wallpaper to sets, and varnished, to secure the glistering polish of marble.

Parquetry floorings are spectacular, but they have heretofore proven difficult and expensive to reproduce for film use. The real thing, of course, is out of the question, and ordinary stencils are not only difficult to apply to large surfaces, but must be held together by "ties" which must be painted out afterward by hand. Recently Tate has evolved a new method of producing parquet effects, which is speedy and economical, and does away entirely with "ties." The required design is painted in stencil form upon fine bolting-silk, with the parts to which the paint is to be applied left clear. This silken stencil is then placed over the floor-surface we wish to color, and a very thin paint flowed over it. This paint is carefully spread over the stencil with a rubber spreader-blade, and passes through the unpainted sections onto the floor, leaving the design as clearly as though stencilled, and without the objectionable "ties." The process may be repeated as many times



as desired, giving an infinite range of patterns.

Another problem recently solved by the Scenic Painting Staff was that of successfully and economically carpeting large sets. Regular carpeting is prohibitively expensive; the usual substitutes—burlop, etc.—are not visually or photographically satisfactory. We, therefore, tried the experiment of making a carpet of monks' cloth, dyed to any desired shade. It has proven completely successful, and highly economical.

#### John Stumar, A.S.C., Injured

John Stumar, A.S.C., had a miraculous escape from serious injury recently when he fell from a camera-car speeding at 40 miles per hour during the making of a scene for "The Criminal Within."

Cinematographer Stumar received numerous cuts, bruises, and a sprained ankle in the accident, but he is reported as recovering rapidly, and completing the picture, supported by a cane and bandages.

#### Chas. Boyle with Camera Supply

Chas. Boyle, A.S.C., has taken over the executive duties associated with the studio department of the Camera Supply Co. of Hollywood.

Boyle is a first cinematographer of many years standing in the industry and has a wide acquaintance in the studios of Hollywood.

## THE LANGUAGE OF COLOR

Continued from Page 108

associated with the well known "Royal Purple," the color of the robes of ancient kings.

Magenta is a showy color, but vulgar and materialistic.

Red, orange and yellow form a group called the warm or active colors. They have a stimulating effect upon us. On the other hand are green, blue and violet, which are called the cool or retreating colors.

As we have mentioned, black, grey and white are not colors but they also have a definite effect upon us. Black is severe, somber, impenetrable, sophisticated and is associated with night, grief, funerals, and the unknown.

Grey is negative, quiet, judicious, solemn, gloomy, reminding us of twilight, rainy days, old age, mist.

White represents knowledge, mercy, purity, truth, coolness, and reminds us of winter, snow, flag of truce, cleanliness.

White mixed with colors suggests youth, gaiety, informality, freshness and coolness.

Grey mixed with colors represents more restraint, refinement.

The mixture of black with colors speaks of dignity, reserve, seriousness, stability.

Now, you ask, why do these certain

colors represent certain emotions as we have pointed out? The answer will be found in any textbook on psychology, under the power of association and suggestion. We always associate the sky with the color blue, and the sky in turn suggests heaven. These two steps are

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the company to move at once to the next sequence. Retakes, if any were needed, would be simple and inexpensive, while the chances of retakes from photographic or recording troubles would be virtually eliminated. It would be difficult to estimate the actual saving achieved through making such a sequence by process shots rather than by taking the company to the actual location but it is safe to state that the entire cost of filming the sequence on the process stage would be considerably less than the single item of transportation on such a location.

### Sound-on-Film Technique Recording for 16mm

Continued from Page 114

sist, due to diffusion, bending-effects, reflection and refraction will function as a recorder like a slit .0020 to .0022mm. in width. For these reasons there exists a definite limit with regard to the frequencies which can be recorded on 16mm film. At present, the limit is about 8000 cycles.

The same considerations likewise apply to the reproduction of sound records made on 16mm film. In addition, a fresh difficulty is encountered inasmuch as the volume decreases proportionately to the decrease in the width of the slit used in the sound-head.

It is also known that in case the slit is not placed accurately, and in a straight position, this will result in a marked loss of high frequencies. It is, therefore, vital that the slit be carefully adjusted before either recording or reproduction.

In the case of 35mm film, a deviation up to one degree will not be harmful; with 16mm film this tolerance may not exceed an angle of 5 degrees. A deviation of 1.5 degrees will limit the frequency-range to a maximum of only 2000 cycles. (See Fig. 2.)

A further difficulty is encountered due to the limited resolving power of the printing material. (See Fig. 3—resolving power of positive film.) To reproduce music and speech satisfactorily, the recorded frequency-range must extend up to at least 5000-6000 cycles. It is, therefore, necessary to compensate the loss in amplitude at higher frequencies caused by insufficient resolving power, as shown in Fig. 3.

The best possibility of doing this seems to be in the re-recording method, that is, re-recording on 16mm film from a 35mm playback print, in the original recording of which the higher frequencies have been favored by the use of a correspondingly tuned amplifying system. For this and several other reasons, the re-recording method of producing 16mm sound-on-film records is preferable to any form of optical reduction.

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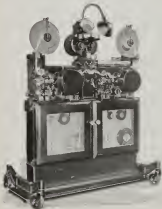
has recently completed a highly efficient re-recording camera for this purpose. It is at present widely used in Europe for electrical reduction of 35mm sound records to 16mm films.

**Riddle Me This**

Continued from Page 112

**BURTON MILLER, Ph.D., Transmission Research Engineer, Warner Bros. Studio:** I believe that the disadvantages of such a change would rather more than offset any possible gains. While it is entirely possible that at a slower speed there would be some lessening of camera-noise, this would be obtained at an excessive cost in sound-quality as well as decreased smoothness in the picture. Regarding the extreme high frequencies which are theoretically possible with present equipment and methods, but rarely really recorded or reproduced, a reduction in speed from 24 to even 18 would cost us one-third of the high frequencies which are actually used. Up to date, the history of sound has been a steady struggle for the higher frequencies, which—to put it simply—"make things sound natural." Reducing the speed would put our sound back to the standards of 1930, at least. This seems too high a price to pay for a slight reduction in camera-noise, which in itself can surely be had without cutting the speed.

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# AMATEUR MOVIES

## this issue

Continuity for Children

Double Exposure

Supplementary Lenses

Backyard Movies

... and other features.

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# AMATEUR MOVIE SECTION

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## Next Month . . .

- Inviting the studios in 16mm—making backgrounds for your miniature pictures. Jerry Auh, A.S.C., will tell you how he did this with his 16mm camera.
- You will be given some new angles on negative-positive 16mm film. This type of film is growing in popularity more and more.
- Another Backyard Movie selected from the many being sent in by Amateurs. Also a complete continuity that can be made by any amateur.
- Wm. J. Grace will give another Cinetricks article in his usually interesting manner.

PROFESSIONAL Criticism of the Amateur picture is a part of the service offered by the AMERICAN CINEMATOGRAPHER. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.



# HERE'S HOW

by A S C Members

*the car headlights did not show up. How can I get the picture I want?*

—CLINIC, New York.

## DEAR CLINIC

"Here's How" is glad indeed to answer your questions. You used good judgment in coming to "Here's How" with your questions. You naturally would want the greatest cinematographic authority in the world to sponsor the answers in view of the fact that you will use the questions in a contest. You are aware that you could not have asked any greater authority than "Here's How," as it has at its command the knowledge of the greatest cinematographers in the world.

You will note that each question has been answered by an unquestionable authority, a member of the American Society of Cinematographers, men who stand very high in the ranks of our cinematographers.

As your letter was seemingly an open letter, Dear Clinic, "Here's How" presumed that you wanted it to answer your questions through its department.

Here are the correct answers, Dear Clinic:

*IN MY recent pictures, while they seem clear enough and well exposed, the subjects do not seem to stand out from the background. What can I do to improve this condition in my motion shots?*

—CLINIC, New York.

The answer to this can be expressed in two words: "back light." Arrange your lighting so that in addition to the front-light, another lamp (or lamps) cast a fairly strong beam on the subject from above and behind. This gives an outlining high-light on the head, shoulders and arms, which effectively separates the subject from the background. This effect is sometimes called "rim-lighting" or "edge-lighting," and is one of the most important secrets of modern cinematographic lighting.

—David Abel, A S C

*I WANT to get a night effect, showing a car driving along the road with the headlights brightly lighted. Having heard that the "A" filter gives a night effect to pictures taken in the daytime, I tried the shot with this, but didn't get the results I wanted because*

To get such a night-effect, you must, of course, use Panchromatic or Super-Sensitive film, the "A" filter (or even a heavier red filter), and underexpose considerably. In order to show the headlights, your car should be coming very nearly straight into the camera, and the regular, diffusing headlight lenses (or reflectors) removed, and replaced by clear ones, so that the light comes out in a strong beam instead of diffusing over the road. More powerful bulbs in the lamps will also help. The strongest generally available are rated at 52 candle-power, and should pick up well. Professional cinematographers, when making such shots, often put an extra storage battery in the car, wiring it into the circuit with the car's regular battery, in order to have added power, in addition, they sometimes use several bulbs in each headlight. In a recent article in the *AMERICAN CINEMATOPHIL*, mention was made of a method by which James S. Brown, A S C, secured such an effect without re-wiring. He replaced the lens of the headlight with tightly-stretched tinfoil, which acted as a reflector, and cast a strong beam of light into this with reflectors or mirrors. However, this would be difficult for the average amateur movie-maker, who can be assured of reasonably good results if the car approaches straight into the camera, with clear lenses, rather than diffusors, in the headlights, and—if possible—more powerful bulbs.

—John Arnold, A S C

*ON several medium long-shots of ladies in white dresses, against a dark foliage background, I have arrived results in which the actors were so badly overexposed as to be almost unrecognizable "white silhouettes." I am what is admitted to be one of the best exposure meters on the market which, in other circumstances, is uniformly dependable. In what respect is the meter (or my technique) at fault?*

—CLINIC, New York.

In all probability, your meter gave an accurate reading of the scene as a whole but it was only an over-all reading, which did not take into consideration the fact

that you were shooting for the people. The reading was, therefore, a mechanically accurate compromise between the exposure required for the dark background (which evidently predominated in area) and the white-clad ladies. The result was that the subjects were badly overexposed, while the foliage was probably slightly underexposed. Either take a separate reading—quite close to the subjects—or cut your exposure one stop from the meter's reading. A green filter might also help, by lightening the rendition of the foliage.

—Clyde de Vinna, A S C

*I HAVE read that a filter will make clouds stand out. I tried a 4x filter one day when the sky was full of clouds, and I could not notice any very great improvement. When have I failed to do the right thing—or I have?*

—CLINIC, New York.

A color-filter makes clouds "stand-out" by absorbing part, or all, of the blue light from the sky, thereby darkening the sky in your picture, and making the clouds stand out prominently. If the sky were a pale, "washed-out" blue, as sometimes happens, the filter will not darken it so noticeably, and accordingly, the clouds will not stand out so prominently. This may have happened in your case. It is more probable, however, that you were using Panchromatic—or,

Continued on Page 181

## A good example of backlighting





## Let's Play Getting Married

by  
**Arthur Campbell**

**W**HEN children imitate "grown-ups" the result is always amusing — if the imitation is spontaneous and natural! Here is a continuity in which the kiddies can have a lot of fun playing at getting married. And the grown-ups can have as much fun filming and screening the story. It is simple and easy to film; you need only three children — a little girl and two boys — but you can use as many juvenile "extras" as you may wish. The whole thing can be filmed in any back-yard or garden, with no special technical equipment or skill. Try it!

### "LET'S PLAY GETTING MARRIED!"

#### The Cast

Jane  
Jimmy, her brother  
Bobby, a neighbor  
Mother  
Neighborhood Children

Scene 1 Angle-shot of the top of a fairly high wall

or fence, shot up from a low set-up. A big ball is seen bouncing up and down behind the fence. Show two or three bounces, with the ball falling back behind the fence each time.

Scene 2 The top of the fence, from a more normal angle. The ball comes up again, and this time bounces over the fence. Pan the camera down with the ball; it lands between a little boy and a little girl (Jimmy and Jane). Jane is sitting on the ground, playing "jacks," and Jimmy is sprawled out nearby, reading the funnypaper.

Scene 3 Close-up of Jane; she looks up in surprise.

Scene 4 Close-up of Jimmy; he, too, looks up surprisedly. Make these two scenes short.

Scene 5 Medium long-shot (full figure) of the two children. The ball lies between them. They look up toward the top of the wall.

Scene 6 Close shot of the top of the wall. Bobby raises his head over the wall; he has found an old top-hat, rather crumpled. He looks down toward the children.

Scene 7 Long-shot, showing the two children at the foot of the wall, and Bobby's head looking over the top. Bobby grovels up his hat to Jane, and smiles. She picks up the ball, gets up and hands it back to him.

Scene 8 Close shot of Jimmy, intently looking at the paper, in which there is a large picture of a wedding group.

Scene 9 Close-up of Jimmy; he looks up — an idea is being born. He looks over toward the other two children.

Scene 10 Close-up of Bobby, grinning down at Jane.

Scene 11 Close-up of Jane. She is embarrassed, but pleased at Bobby's attention. She smiles shyly, and steals a glance up at him.

Scene 12 Close-up of Jimmy; he turns his head, looks down at the paper.

Scene 13 (Insert) Close-up of the newspaper picture of the wedding-group.

Scene 14 Close-up of Jimmy. He looks up — he has a big idea! He turns to the other two and speaks.

**TITLE** "Let's play getting married! Bobby can be the groom — Jane the bride — and I'll be the minister!"

Scene 15 Close shot of Bobby and Jane; they grin and nod approvingly. Bobby's head disappears.

Scene 16 Long-shot. Jimmy and Jane run out of the picture.

Scene 17 Long-shot, looking down a sidewalk. A neighbor boy wanders down the walk into the camera. As he gets close to the camera, he stops and looks off to the left.

Scene 18 Long-shot, the sidewalk is in the background, with the neighbor boy walking along it. Jimmy and Jane run into the foreground, they see the boy, and stop. They shout to him, and he, too, stops.

Scene 19 Close-up of Jimmy, shouting.

**TITLE** "We're gonna have a wedding — get the gang!"

Scene 20 Medium-long-shot (from opposite angle) of Jimmy and Jane. They run on out of the picture. (Keep the direction of their movement the same — preferably from left to right in all these scenes.)

Scene 21 Same as Scene 17. The neighbor boy hurries off.

Scene 22 Medium-shot of a window (from outside). Jimmie comes past with a strange assortment of clothes in his hands, followed by Jane, similarly burdened, with one hand on her lips indicating silence.

Continued on Page 133

"IF ALL the double exposures used today on the professional screen were laid end to end . . . etc.," would be a suitable BELIEVE IT OR NOT for Mr. Robt. L. Ripley. Indeed, the universal use of double exposures in motion pictures today places this type of Cinetricks at the unquestioned head of the list.

One of the first mistakes the fledgling still photographer makes is that of forgetting to wind the film or pull the peck tab after each exposure, with the result that two pictures are taken in the same film area. This same "mistake," however, is purposely made by the highest paid professional workers, and when properly and intelligently done, the screen effect accomplishes a psychological effect quite necessary to the story.

The repetition has lost a tinge of interest on its truth, nevertheless the observation, "The motion picture is the concrete representation of the mental processes of imagination," freely explains the growing success of photographic story-telling.

The human mind has the facile power to flit from place to place, from subject to subject, from period to period, obliterating space and time. Facile the this phenomenon, the human mind does not suddenly jump the hurdles of space and time, there is a smooth, albeit rapid, waving of the present mental picture overlapping the waxing of the next picture. Seldom does one picture suddenly disappear to be replaced or suddenly by the next, unless events are being reviewed mentally in quick flashes.

No more, then, should a screen story abruptly change from one scene to the next. Motion pictures are as much a psychological impression as they are visual records of the oriented appearance of things.

I don't know just when professional producers first realized the importance of this basic principle, to-wit, the idea that motion pictures should be built to appeal to the mind as to the eye. But from the moment that realization of this important psychological principle came, films that moment motion pictures were lifted out of the novelty class to the high plane of a medium of expression unparalleled. In the last few years, so much study has been made along this line, that certain experiments have gone the limit. The illusory effects attributed to the Russian school, and called by a French name, *montage*, may be quite over the heads of most of us, but it does indicate the intensive study and effort to precipitate solid, concrete examples of the possibilities from vaporous ideas.

But whether or not you care to apply *montage* to your own filming, by all means consider the preponderance of authority in the one field recommending double exposure transitions wherever possible. Simple or pretentious, scarcely a film can do without some double exposure effects.

When the Cinetricks "double exposure" is mentioned, most of us assume that ghost work is the only real phase of the procedure, and since few are the opportunities for ghost scenes, we forget the rest of the work. A lonely bachelor sees in the smoke of his faithful pipe the beautiful face of his dream in his life. That sort of thing. Actually, this sort of double exposure work constitutes about 2% of the total, so it is relatively unimportant. Forgetting for the moment these longer double exposures, let's talk about the more common use of double exposures—lap dissolves and wipes.

Laps and wipes constitute the great bulk of double exposure one work, yet few amateurs have tried to use them in their filming. Perhaps the biggest stumbling block is the lack of proper tools with which to do the work.

Professional cameramen seldom make their own laps and wipes these days, because every camera and the sound recorder must be brought up to synchronous speed before the screen action is started. The effects are built in by the

## Cinetricks---

laboratory technicians with optical printers. Amateurs, of course, do not have such facilities, because of the reversal film they use. Effects must be built into the amateur film as it is photographed. The degree of pretentiousness to which he may carry his double exposure work depends on his equipment and his ingenuity.

There are only two standard American amateur cameras built so that film may be backed up or rewound right in the camera. One is the new Victor and the other the Cine-Kodak Special. It is quite possible, however, to install means on certain other standard cameras, such as is illustrated with this article, for rewinding film in the camera.

It is possible, altho sometimes rather inconvenient, for the amateur to take his camera into a darkroom, unthread the film, pull back the estimated amount of film involved in the double exposure, and rethread it. Practically all 16mm cameras using the standard spools may be rethreaded in the darkroom, but I strongly advise against attempting this operation with the 8mm Cine-Kodaks. It is not impossible, but very difficult to unthread and rethread one of these little cameras in the dark. Try it sometime. The Pockette camera, if the magazine could be put in upside down, would be very handy for rewinding the film in the magazine, altho only for short lengths. If long lengths were rewound, jamming would very likely occur and the film would be spoiled.

"You can't have your cake and eat it, too," describes the compromise you must bow to at present in rewinding film. It is impossible to rewind more film than the spring motor will allow. When the motor has been wound up by the manual rewind mechanism, that's all the film you rewind. You quite naturally enjoy the convenience of a simple spring motor to drive your camera. But you must also suffer at least some inconvenience in rewinding film in the camera, for no amateur camera has appeared with a de-clutching arrangement. With the Special, of course, the film magazine may be removed and the motor allowed to run down for longer rewinds. All cameras at present, however, wind up the spring as the film is backed up.

A simple subterfuge may be employed, of course, even with cameras on the market today and with those to which this rewinding means may be added. When the film has been backed up as far as the spring motor will allow, unthreading the film and allowing the motor to run down will make it possible to rewind still further. This has been done in certain cases, to my knowledge, and very satisfactorily.

If you contemplate the purchase of a camera equipped for rewinding film, or if you are thinking about having your present camera so remodelled, don't let this slight limitation stand in your way. Out of a thousand double exposures, probably not one will be longer than one springful. Dissolves and wipes will be the greater portion of your work.

New for the mechanics of the simpler and more widely used phases of double exposures—lap dissolves and wipes. In numerous publications and tests on the subject I have read that the standard dissolve or wipe takes place in three seconds. If the professional screen is to be taken as a standard, however, you will find that this is too long. In pictorials, the maximum seems to be two seconds, while 95%

# Explaining Double Exposures

by  
Wm. J. Grace

of all dissolves and wipes is about  $1\frac{1}{2}$  seconds. At the normal amateur standard speed of 16 frames per second, this means 24 frames are involved in laps. Using 16mm film, this is about 7 inches, using 8mm, about 3½.

It is quite necessary that wipes be accurately rewound frame by frame. Laps are almost as particular. For this reason, the camera should be equipped with a frame counter or a counter which registers footage to the tenth of a foot.

Using a camera equipped for standard work only, then, the amateur must learn to smoothly close down the lens diaphragm in a given time, take it to a darkroom and back up the film the required amount, and open up the diaphragm on the following scene of the same rate of speed as he closed it on the last scene. This is not at all impossible to learn to do rather well.

In order to make the actual rewinding of film in the camera easier, a camera so equipped will of course be more convenient to use, and if it is equipped with accurate footage or frame indication means, excellent work may be done.

The ultimate in convenience and accuracy, of course, is possible if some automatic device is built on the camera so that a fading "plate" or wipe "plate" is moved before the lens in synchronism with the travel of the film. The optical printers of professional studios are so built, as is the Rewind-Dissolve shown installed on the Cine-Kodak K accompanying this article. The effect plate is moved across a slot before the lens and is geared to the camera and controlled by a release button. A footage counter shows footage in tenths of a foot.

In conclusion, may we review the reason for double exposure work. If a little extra thought will improve our handiwork, if a few more ounces of effort are expended to make something better, is that work to be considered as unnecessary? Will we be satisfied with ordinary results when, by dint of application of better tools and some ingenuity, perfection may be that much closer? The most noticeable flaw in most amateur filming is the glaring absence of out-of-the-ordinary effects. And yet, simple as are some of them, any amateur picture is bettered by the intelligent application of one or more Cinetricks. Our single hope is that this series of articles on the making of trick work will be the inspiration to amateurs the world over to make better films, to know how and why certain effects may improve their product, and lost but not least, to derive even more pleasure from movie work.

## Making a Fading-Glass

A very handy method of making fades—and lap-dissolves, too, if your camera will wind back—is a "fading-glass." This is simply a fairly long piece of glass, graduating from absolute opacity of one end to perfectly clear glass at the other. In use, the glass is placed directly in front of the lens, and moved across so that, for a fade-out, you would begin with the clear end in front of the lens, and finish with the opaque section completely obscuring the lens. For the best results, the glass should move in some sort of a frame, such as some of the filter-holders available.

An easy way to make a fading-glass is to take an ordinary photographic plate (the size of the plate will naturally depend upon the length needed for your fading-glass), and expose it to white light, under a slide which is slowly moved across the plate, so that one end gets maximum exposure, and the opposite end none at all. Then develop this plate—using a good developer, and developing until maximum density is reached at the dark end. Then fix, wash and dry the plate in the usual manner, and your glass is ready—it can then be cut to whatever size you wish.

A variation of this is to expose the plate completely, thereafter developing, fixing and washing as usual, so that you get a perfectly black deposit all over the plate. Next, place the plate in an inclined position in a developing tray, and apply any reducing agent, with a bit of cotton, swabbing progressively upward. This can be done so that the silver deposit is entirely removed from the lower end of the plate, and graduates from there to the upper end, from which none of the deposit has been removed. An excellent reducer to use for this is the well-known "Farrer's Reducer," which is composed of a 20% solution of plain hypos, to which a little 10% solution of potassium ferricyanide has been added. Any photographic reducer will do for this purpose, however—including the various commercial ready-mixed reducers.

ARTHUR CAMPBELL





Fig. 3

**Editor's Note:** The article in our May issue, "Nature Photography with Cine-Kodak," has brought in many inquiries relative to the use of the supplementary lens that we are putting into that portion of Mr. Maferlein's paper which deals with that particular lens.

THE amateur camera lens is not designed to focus on objects closer than two feet. The supplementary lens is not only the simplest method of focusing for shorter distances, but also has a decided advantage, since the indicated  $f$  aperture of the camera lens is still valid, even for very short distances. Thus, the same aperture setting is used for the photography of small objects as for distant objects, and Kodachrome photography is quite practical, provided the supplementary lens is large enough to avoid cutting off the marginal rays.

The action of the supplementary lens is shown in Figure 1. When the camera lens is focused for infinity, the focal length of the supplementary lens required is equal to the distance of the supplementary lens from the object to be photographed. This is independent of the focal length of the camera lens. The supplementary lens may be regarded as creating a virtual image at infinity, for which the camera lens is focused. The light proceeding to any one point in the film plane, forms a parallel bundle between the camera lens and supplementary lens. The degree of separation of these two, therefore, does not affect the focus; the spacing of importance is that between the supplementary lens and the object. The supplementary lens must not be so far from the camera lens that part of the image-forming light is cut off, as shown in the lower diagram in Figure 1. As regards the optical quality required in the supplementary lens, for object distances down to eight inches, simple spectacle lenses of the Bausch and Lomb "Calex" double-convex type have proved satisfactory, even with Cine-Kodak lens apertures of  $f/1.9$ . The theoretically preferable type is plano-convex, with the plane side facing the object. For subject distances shorter than eight inches, a camera lens of the required focal lengths given in Table II are available from Bausch and Lomb as motion picture objectives. Still camera anastigmats of suitable focal length may be used.

#### CONSTRUCTIONAL DETAILS

The details of a preferred construction are as follows. The distance  $d$  (Fig. 2) at which the object should be photographed is the same as the distance from the eye at which the object is held for viewing, provided the field size resulting is large enough. Field sizes are given in Table II. A distance of ten inches has been found satisfactory for many small objects, such as flowers, small animals, large insects, etc.

## Action of

The proper supplementary lens can be mounted easily with cellulose cement in a wooden upright, using a stepped circular hole made by an expansion bit. This lens is mounted close to the camera lens, and so that its center is on the camera lens axis. A decentring error of 1-16th inch is not objectionable. The wire frame is not placed exactly at the plane of sharp focus, because it has been found impossible to surround all objects with the frame. It is therefore set 1-12th inches closer to the camera. Experience has shown that the estimation of the field position and limits offers no difficulty with this arrangement.

The frame, of wire 1/16th inch in diameter, is made to exceed the field limit by about 1/4 inch on all sides. The ends of the wire are secured to the base **B**, and cleat **C** holds the frame in place. The frame is bent so that its geometrical center is on the camera lens axis. If one side of the frame appears in preliminary pictures, the frame may be shifted or bent as required. In order to attach the camera to the base **B** a hole is drilled for a screw. A 1/4-inch machine screw will serve to engage with the tripod bushing of the camera. This hole is so placed that the camera rests against the blocks **PP** to assure replacing it exactly. The blocks **PP** are placed on the side shown to permit easy winding and reloading.

If desired, the supplementary lens mount may be hinged at the base, to remove it for distance photography, with which the frame does not interfere.

The accessory known as the "Cine-Kodak Titrer" can be used in the manner outlined. The easel which takes the title card forms the frame, and does not show in the picture. The focus comes exactly on the frame, and the field size is  $2\frac{1}{2} \times 2\frac{3}{4}$  inches. This is rather small for most subjects.

The fourth class of subject in nature photography, that is, things we examine through a magnifying glass, can be photographed up to X10 magnification with the same type of device, as shown in Figure 3. The supplementary lens in this case is a 25mm focus anastigmat.

This magnification, X10, has been found unnecessarily high for many subjects, and manipulation is somewhat awkward. An attachment for X5 magnification is more useful and more usable, and is best accomplished with a 50-mm anastigmat used as a supplementary lens. This lens must be somewhat greater in diameter than the camera lens, to avoid cutting off the edge of the field, as shown in the lower diagram of Figure 4.

The construction of this attachment is beyond most amateurs, but the required mounting can be made by any machinist. A filter cell may be built into the mounting, which may then be attached to the camera in the manner of a filter. The anastigmat used as a supplementary lens must be mounted with its front facing the camera. The wire frame, of spring steel wire, is adjusted so that the image of a distant object, created by the supplementary lens alone, falls in the plane of the frame. A final adjustment is made with the attachment on the camera, by photographing a pin in and near the plane of the frame,

# Supplementary Lenses



by  
**J. W. McFarlane**  
Research Dept., Eastman Kodak Co.

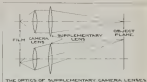
and adjusting the frame according to the result. Care must be taken to keep the subject in the plane of the frame, since the depth of focus, given in Table I, is quite small.

Excellent Kodachrome pictures have been taken at X5 magnification using a 50mm f. 1.9 motion picture objective as a supplementary lens.

Concerning the third class of subject, small objects which cannot be approached, it is difficult to apply the simpler type of Cine-Kodak to this work. A long focus lens must be used to obtain a sufficiently large image of the distant small object, and the long focus (telephoto) lenses supplied are focussed by estimating the subject distance. In this work this distance is 20-100 feet, which is much shorter than that figuring in ordinary telephoto work. The depth of focus for near subjects is so small with long focus lenses that it is impractical to focus by estimation. The Cine-Kodak Special, however, is quite well suited to this work, as any of the lenses supplied may be focussed critically by means of the built-in reflex finder. It is therefore easy to obtain sharply focussed pictures with the long focus lenses required.

In making nature photographs, care must be exercised in the choice of subject. The most important thing, in fact the only reason for the existence of motion pictures, is interest, and the interest must be a moving one. Consequently, motion pictures of flowers with nothing happening, are not of much interest. If, however, the picture is a time-lapse one of the flower opening, or a bee working on it, or its functions are being demonstrated, it is another story. On the other hand, small animals and insects produce very interesting pictures. The most difficult part is to get them to act, and this is one of the fascinations of this type of work.

Nature photography with the Cine-Kodak is a combination of two hobbies, the oldest hobby and the newest. The earliest records left by prehistoric man show his interest in the world around him, his drawings made on the walls of caves are evidence of this. All through the ages men have interested themselves in the study of plants, animals, insects, and birds—studying their lives and habits, and as a hobby, it has always been satisfying. On the other hand, the newest hobby, excluding fads, is the making of amateur motion pictures. This hobby is about ten years old and the other about twenty thousand. And so we have a union of hobbies, one from the old Stone Age, another, machine created, an outlet for man's primitive and modern interests, in the creation of motion pictures of the natural world.



THE OPTICS OF SUPPLEMENTARY CAMERA LENSES

Fig. I



Fig. II

TABLE I  
Depth of Focus

Radius of disk of confusion=0.0025cm

Subject distance for 35mm lens with supplementary lens	Overall Angular Magnification	Magnification on film <sup>a</sup>	Depth of F.S. at C.B. <sup>b</sup>
Inches	x 0.5		mm mm
20	x 0.5	x 80	21.0 5.3
10	x 1	x 1	5.8 2.9
5	x 2	x 2	1.4 0.7
2	x 5	x 7	0.23 0.08
1	x 10	x 9	0.07 x 0.2

<sup>a</sup>These data apply to camera lenses of all focal lengths.

TABLE II

Data for 16mm camera with 25mm lenses, and 8mm camera with 12.5mm lenses

Photo- graphic lens a	Focal length b	Dis- tance c	Supplementary Lens d
Inches	Inches	Inches	
30	12.5/16	4	1.6 diopter
15 1/2	6 1/8	2	2.6 diopter
10	4 1/4	1	3.6 diopter
7 1/2	3 1/8	1	5.6 diopter
5	2 1/4	1	8.6 diopter

<sup>a</sup>When focal length of Camera lens focal length mm.  
<sup>b</sup>When focal length mm.  
<sup>c</sup>When focal length mm.  
<sup>d</sup>When focal length mm.

# Filter Your Close-ups

by  
Gilbert Wamont, A. S. C.

**D**ID YOU ever try using a color-filter when making close-ups? Try it! In many instances filtering will improve close-ups tremendously. Most amateur cinematographers (and photographers, too!) overlook this use of filters. They seem to regard color-filters as a sort of "one-purpose" accessory—a useful tool for photographing landscapes, and especially for bringing out cloud-effects. True enough, filters are primarily intended for this purpose—but they can be very useful indeed in making close-ups, and in much other general work.

In a close-up, the thing we are most interested in is the face, especially in the way our picture renders the skin-texture, and what it does to make-up, facial blemishes, and the like. Here is just where the filter helps! Proper filtering will give a more natural skin-texture, smooth out wrinkles, fill in shadows, and make the make-up (if the subject is feminine) appear more natural.

Look at the upper picture, for instance. It was made on Panchromatic film, without a filter. How many times have you made a close-up of one of your friends—a nice, well-composed, well-lighted shot—and suffered the disappointment of hearing the friend complain, "Oh! My skin isn't as bad as all that—and look at those wrinkles!" And yet, in all probability, your camera reproduced truthfully what it saw. Between the critical quality of modern lenses, and the color-sensitivity of modern emulsions, the camera sees things in far greater (and often more unfavorable) detail than do our eyes. It picks up any imperfection in skin-texture, coloring or make-up, and magnifies it on the screen. It often exaggerates wrinkles that are virtually invisible to the eye. In other words, it shows things too well—too truthfully. In order to get a pleasing picture, we must often fool the camera. That is why a professional portrait photographer always has his negatives carefully retouched, and a professional cinematographer always has his actors wear make-up. For the same reason, professionals nearly always use at least a slight diffusion on their closer shots.

Now, these remedies aren't usually possible for the amateur. You can't retouch a motion picture film. Neither can the family filmer insist that his victims don studio make-up. It is possible, of course, to use a diffusion filter with amateur cameras, but for a number of practical and technical reasons, this is none too satisfactory in substantial filming. So filtering is the most logical remedy.

Now, look at the lower picture. It was made on Panchromatic film, with the same camera, and a "G" filter.

What has happened? First of all, the picture is given a softer general quality. Part of this is due to the filtering action, and part to the added glass surfaces of the filter, at any rate, the quality is appreciably softer and more pleasing. The skin-texture is much more natural—and, incidentally, more pleasing. And where are the wrinkles? They are practically *erased*! Another thing, too, notice that the shadows are appreciably lightened—an important consideration in close-ups made in the sun, cross-lighted. Also, the rendition of the lips (made up as usual, with ordinary lipstick) is lighter, and more natural.

The use of a filter helps, indirectly, in our effort to concentrate attention on the face. Normally, in making close-ups out-of-doors, we work with the lens stopped down to a fairly small opening; accordingly, the depth of focus is considerable—especially with 15mm and 16mm cameras—and the background is usually in fairly sharp focus. This is often a disturbing element, particularly so if there is much movement in the distance. Using a filter, the lens must naturally be used at a larger aperture, which decreases the

Continued on Page 141







# Shooting Sixty Thousand Caribou

by  
**George J. Lancaster, A. S. C.**

**F**OR THREE DAYS I rowed and drifted down the mighty Yukon. I was searching for the great herd of caribou soon due to swim the river in their yearly migration northward.

"There's a story," the editor said. "Go up there and get it!" So it was that I found myself in a small skiff, floating down-stream on the great river of the North. I had a camera, several thousand feet of film—and an idea. Just an idea, mind you—not a story. I knew that the immense herd of caribou was due to cross the Yukon, but that was all. It was up to me to make the story with my camera!

My search had narrowed down to a hundred-mile stretch of river, somewhere in those hundred miles of wasteland, thousands of caribou would have to swim across to reach their summer grazing-grounds in the Arctic. Down-stream I paddled, day after day, always watching—and hoping—for some sign of the herd. Not a caribou in sight! So I loaded skiff, camera, and all onto a river-steamer, and headed back to repeat my trip.

Then, suddenly—caribou! Thousands of them—

swimming and milking in the river, pushing and crowding on the banks. Over sixty thousand of them! What a sight—and what a picture! I got busy at once.

First, I set up my cameras on the lower deck of the steamer, and got some conventional long-shots, to show the way the herd was fording the river. Then I moved to the upper deck, and ground out many more scenes of the animals, splashing and swimming in the river, and crowding on the banks. The boat was approaching the herd, so I got some nice moving shots as we drew near. As we came closer, it was necessary for the boat to heave to, for the river was literally jammed with swimming caribou, we couldn't get through. That gave me an opportunity to make closer shots of the animals. I moved to the upper deck, and ground out medium-shots and close-ups from all angles. Here, my telephone lenses gave good service. I made close-ups of the beasts swimming toward the camera, away from the camera, and passing right across the picture.

So much for the swimming! I had established that fact now for some shots on land to show the herd entering and leaving the water. The skipper accommodatingly set me ashore, and again I started out with long-shots. Then, with the telephone lenses, closer and yet closer shots of the herd and of individual animals coming toward the camera head-on, and of a three-quarter angle, passing the camera and going away from me at both three-quarter and straight "tail-on" angles. Next, I climbed a tree, Eyem in hand, and got a shot of the herd passing below me. I made this shooting straight down on them. Then more close-ups and extreme close-ups of heads coming right into the lens. Next, I crouched on the ground and made close shots of nothing but the hoofs and legs plodding along the trail. Then more extreme close-ups of heads and antlers, passing across the picture.

In all of these shots, I took particular pains to keep the direction of movement always the same—that is, from right to left. This is important, for if you don't keep your movement consistent, your audience will be confused—they won't be able to tell whether there is one herd, or several, or if the beasts are all going the same way.

Now I had shot the caribou from all angles—long-shots, medium-shots, and close-ups, "he-me" and reverse-angles, shots of the herd as a whole, and of groups and individuals, in three-quarter light and back-light, and everything from a bird's-eye view to a worm's-eye view. Plenty of footage for the editor to choose from. And now I was back on the boat, homeward bound, with the main part of my assignment—the caribou—the punch of the picture—"in the box." But one cannot make a picture with only one bare idea, no matter how much footage, or how many angles, he may have. What would the audience want to know, that I could answer with my camera?

How did I get into the Yukon? What did it look like? And perhaps a thousand other questions. I could answer that well enough!

So I went to work and showed them how the old river-boat looked, the big, bearded river-pilot at the wheel, the fireman throwing cord-wood into the fires, the steam-gauges, the pistons that drove the old stern-wheel pocket, and finally the big paddle-wheel churning the water to cream, with the caribou-herd still swimming in the distance. I even showed the picturesque old French-Canadian cook peering out of his galley, a huge carving-knife in one hand, while he thoughtfully stroked his unshaven chin with the other. Even I knew what he was thinking about—and so

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Top: Home portrait. 1/5th sec. Summer lens at f4.5. Dupont Superpan, 2 photoflood lights and two 100 watt lights. Bottom: Casual Party Shot. 1/100th sec. Hixler Lens at f4.5 on Dupont Superpan. Diffused sunlight.

## At Home With Your Candid Camera

by  
**Clarence Slifer, A.S.C.**

**A** NUMBER of years ago, while going over some old books of the Civil War period that I had just purchased, I found this polite invitation:

"Yourself, and those of your household, are especially invited to call at my DAGUERREAN ROOMS, at Haynes Hall, and examine my specimens with a view to schafy yourself that I am prepared with all the conveniences for making **FIRST CLASS LIKENESSES**."

"My long experience and practice with master workmen has enabled me to overcome all those chemical difficulties, that prevent the mass of traveling artists from making clear and bold pictures. By my process likenesses are made equally perfect in clear and cloudy weather."

"Please call at your earliest convenience."

"Yours Truly,

"J. F. CRANCE."

What a transition photography has undergone during the intervening seventy odd years, since the issuing of that invitation, and now! Why, even at the present time, improvements and innovations in photographic apparatus are

taking place with such amazing rapidity as to keep interested even the most blasé of cameramen.

Once again, only this time in a modern guise, yourself and those of your household are especially invited to obtain clear, bold, **FIRST CLASS LIKENESSES**. Gone, of course, is the old "traveling artist" and his Daguerrean apparatus. Today you are the "artist" and your apparatus is the modern miniature camera with its simplicity and amazing performance. With little effort you make photographs under conditions which our Daguerrean friend would hardly have had the courage to prophesy as some day being feasible.

Those "chemical difficulties" which were so troublesome to the "traveling artist" offer no obstacles to you. You have your choice of many excellent prepared developers. Also the processes of developing and making enlargements have been so simplified and systematized that even the kitchen of a small apartment can readily serve as a "laboratory." However, if the cook should firmly put her little foot down and stop any such appropriation of her kitchen, or should you not wish to indulge in the sport of making good enlargements, there is always a nearby photo-finisher who specializes in miniature work.

The weather, which once figured so prominently in the scheme of things, is now reduced to playing the minor role of "set-dresser." For pictures can now be made under most all natural conditions. Snapshots indoors and at night, too, are as easily made as those outdoors in bright sunlight. Fast lenses, film of superb color correction and speed, and inexpensive Photoflood lights combine to give you the utmost enjoyment from your Leica, at home.

Pictures in and about the home are always convenient for you to make. The preparations are few and simple. Should you wish to make snapshots indoors at night or on a dull day, the only preparation is the replacing of the bulbs in a couple of bridge lamps with Photoflood bulbs. A tripod for the camera is unnecessary. The camera is used with the same flexibility as it is outdoors. With this simple preparation, we are ready to make those intimate, life-like, unposed pictures of Mother, Dad, the wife, the kiddies, and others. Charming pictures made in natural and familiar surroundings. Pictures, that in after years will be so valuable in recalling pleasant memories. With the miniature camera, we are developing a new conception of photography, a photographic realism.

There are many ways in which your candid camera may well serve you at home. The economy with which your camera makes pictures, and its elimination of blanks and double exposures, allow you to make many more pictures than would be possible with a larger camera and still balance the photographic budget. Among the many pictures that can be made at home, are portrait studies, the 90mm lens being ideally suited for this work. Candid snapshots can be made at parties and of friends when they drop in for an evening visit. Interior and exterior views of your home are always desirable, and for these, the wide-angle 35mm lens will be helpful in tight spots. Nothing more need be said about making an abundance of camera studies of the children. Even lively youngsters at play are a cinch for this modern method of photography.

Photograph your subjects while they are engaged with their pet hobbies, as miniature shipbuilding, painting, stamp collecting, or just plain old fashioned mud-pie making. Another valuable use for the Leica is the copying of rare old family paintings and photographs. In fact, copying in itself can become a hobby. Thus, a collection of

Continued on Page 126



# BACKYARD MOVIES

## Movie Film Free

• R. B. Haines, this month's winner, contributes an unusually timely story which is none the less a true "Backyard Movie." It combines interesting, believable action with both comedy and dramatic suspense, in a continuity which should be very easily filmed. Here it is—try it!

### "STICK 'EM UP!"

#### Cast of Characters

Junior a typical boy—age 8 to 12 years  
Joe his playmate  
Mother  
Father  
A Burglar A tough character,  
carrying burglar's tools and a revolver

Scene 1 Long-shot. The story opens with Junior and Joe trying to make a much broken-down toy automobile and a wagon have a good smash-up in the back yard. They soon become disgusted and start to look at a newspaper lying in the yard.

Scene 2 Close-up of Junior, pointing to a picture in the newspaper, with Joe looking over his shoulder.

Scene 3 INSERT Close shot of newspaper picture of a captured gangster and his guns.

Scene 4 Medium-shot Joe looks up from the newspaper, and as true gangster fashion points his finger at Junior and says, "BANG!" Junior instantly grasps the idea, and likewise "shoots" Joe.

Scene 5 Long-shot. The two boys jump to their feet, "shooting", Junior retreats out of the picture, followed by Joe.

Scene 6 Long-shot Junior steals cautiously around the corner of the garage (or, better still, a workshop) where Dad is working. His finger is extended, still "playing gun." He starts to "shoot" (out of the picture), but stops, looks at Dad, then at his hand, and abruptly enters the shop.

Scene 7 Medium-shot Junior asks Dad to make him a pistol and sub-machine gun like the gangster had.

Scene 8 Dad tells Junior to go and play—he's too busy.

Scene 9 Junior reaches up on the workbench for a drawing-knife or any

R. B. Haines of Los Angeles gives us a practical idea for the use of the 8mm or 16mm camera. Here is an idea that everyone will find practical. Messes, of course, gets the roll of Paschoanatic film. Read his suggestion over—see how simple it is, but how practical. Then try your hand at winning a roll of film free. Send your suggestions to the Editor.

sharp tool—he's going to make a gun himself.

Scene 10 Dad looks up from his work. He sees what Junior is doing, smiles, and goes over to help.

Scene 11 Medium-shot Dad is working on a wooden gun, while Junior and Joe watch intently. DISSOLVE TO

Scene 12 Medium-shot of Mother (in house), locking up the family silver.

Scene 13 Close shot of Mother putting jewelry and rings into a strong-box.

Scene 14 Medium-shot of Mother, trying the catch on a window. She carefully pulls down the shade, and walks out of the picture.

Scene 15 Close-up of Mother, talking earnestly over the phone.

TITLE "Only yesterday Jones' house was robbed in bright daylight. We've got everything locked up."

Scene 16 Medium long-shot in workshop. Father is putting the finishing touches on a wooden pistol. On the bench lies a completed wooden sub-machine gun. Junior is critically telling Dad just how the pistol should be made.

Scene 17 Close-up of Father, trying to be patient under Junior's exacting supervision.

Scene 18 Close-up of the toy pistol in Father's hands. DISSOLVE TO

Scene 19 Medium long-shot of a white wall. A threatening shadow of a man enters the picture—the shadow falling on the white wall.

Scene 20 Medium-shot of the Burglar, advancing up an alley, straight into the camera. He walks furtively, and pauses to glance into each backyard he passes.

Scene 21 Medium long-shot in the workshop. Father has finished the pistol, which he hands to Junior, while Joe

takes the machine-gun. The two children rush out of the picture, "shooting" as they go. Father looks after them, smiling, and then goes back to his work.

Scene 22 Long-shot of Junior and Joe playing gangster in the backyard. They have all the flourishes of real "tough guys."

Scene 23 Long-shot in the alley the Burglar is seen approaching, he pauses at a gate close to the camera.

Scene 24 Junior, pistol in hand, approaches a window of his house. (To be most effective, this window should be partially screened by shrubbery, supposedly not visible from either the garage or the rest of the yard, also handy to the alley.)

Scene 25 Long-shot of Mother in the kitchen, preparing a meal. She is nervous and apprehensive.

Scene 26 Same as Scene 23. The Burglar enters the gate.

Scene 27 The Burglar approaches the same window shown in Scene 24, but from a different angle.

Scene 28 Same as Scene 24. Junior turns about and goes back, looking for Joe.

Scene 29 Close-up of the Burglar at the window. He is prying off the screen, and comes a revolver in one hand.

Scene 30 Quick flash of Father at work.

Scene 31 Quick flash of Mother in the kitchen.

Scene 32 Flash of Joe, with his gun.

Scene 33 Close shot of Junior, against side of house. He enters from the same direction he was going in Scene 28, then turns about and again heads toward the window.

Scene 34 Long-shot, by the window. The Burglar is at work, and in the background, Junior rounds a bush. He sees only the Burglar's back, and nukes up with his "gun" extended.

Scene 35 Close-up of Junior. (If possible, show Burglar's back to one side of foreground.) Junior shouts "Hands UP!"

Scene 36 Reverse-angle of Scene 34. The Burglar, startled, jumps, dropping revolver and "jimmy," and puts up his hands.

Scene 37 Close-up of Junior. He registers surprise, then recognition of the fact that the man is a Burglar. Then he glances down.

Continued on Page 136

## SOUND-ON-FILM

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## BACKYARD MOVIES

Continued from Page 133

Scene 38 INSERT—close-up of the Burglar's real pistol, lying in the grass.

Scene 39 Long-shot Junior drops his wooden pistol, and snatches up the Burglar's dropped weapon. Then he backs off, out of the picture.

Scene 40 Close-up of the Burglar's face—he looks surprised, but savage. He glances down.

Scene 41 INSERT Close-up of Junior's dropped toy pistol.

Scene 42 Close-up of Burglar, very angry.

Scene 43 Long-shot of Junior, backing away. He is getting frightened—quickens his pace, then turns and runs. A moment later the Burglar runs into the picture (from behind camera).

Scene 44 Close-up of Junior (big head). He yells: Make this a short flash.

Scene 45 Flash of Father, stopping his work. He jumps up and runs into camera, quickly filling the frame.

Scene 46 Flash of Mother in the kitchen—she hears and is frightened.

Scene 47 Long-shot The Burglar is gaining on Junior.

Scene 48 Long-shot, near the garage. The Burglar is almost upon Junior, but as he reaches out to grab him, he trips over the toy wagon and falls. Pan the camera to follow Junior as he reaches the garage and hands the gun to Father.

Scene 49 INSERT Close-up of the real gun in Father's hand, pointing toward the Burglar (not shown) in a menacing manner.

Scene 50 Medium long-shot of the Burglar, picking himself up, with his hands in the air.

Scene 51 Long-shot Father holds the Burglar by arm, and Mother and Joe run into the picture. DISSOLVE TO

Scene 52 Medium long-shot of Junior and Joe, again playing in the yard, with a new auto and wagon. Both have a pistol strapped to each hip, and in the wagon and auto are mounted shiny ray sub-machine guns. On each boy's chest is a ray "Police" star.

Scene 53 Close-up of Junior, plainly showing the "Police" badge.

Scene 54 Long-shot from inside house, or from another angle in the garden. Mother and Father are in the foreground, watching the boys at play. They register complete approval. FADE OUT.

THE END

If you have the opportunity to do so, you can add a very interesting sequence

after Scene 51, showing the Police radio-car system in action—sending the message, the officers picking it up, the radio-car speeding to the house, and arriving to arrest the Burglar. This could be followed by scenes showing the policemen congratulating the boys, and pinning the badges upon them.

The film, as written, can be made in any neighborhood, and the cast is easily assembled. If necessary, Father could double for the Burglar, keeping his face away from the camera in all his scenes in this part. If your own backyard is not adapted to all of the scenes, the script is written so that you can use several different yards for the various scenes when assembled, they will give the impression of having been made in a single yard—if you choose your angles right. The interior scenes, if necessary, can be eliminated, and the few really important ones (Scenes 35, 25, 31 and 46) transposed to porches, etc.

R. B. HAINES,  
Los Angeles, Calif.

## At Home With Your Candid Camera

Continued from Page 134

such prints would give the highlights of the year's news. Great fun can be had at costume parties by making quaint old silhouettes by photography. In fact, many new and interesting uses of the camera about the home will be found, from time to time.

The Eastman Kodak Company publish a book which is full of valuable information for the amateur who wishes to use his camera to the full advantage, at home. It is sold at cost and the title is HOW TO MAKE GOOD PICTURES.

So if you have only used your miniature camera on week-end excursions, or because the camera has a high-speed, focal-plane shutter and a telephoto lens, shoot most of your film on hour-long speed stunts, or if your time has been occupied in other fields of photographic endeavor, don't overlook the picture opportunities at home. Your home photographs may not be as awe-inspiring or be hung at any of the salons, like the others, but they will be infinitely more charming and valuable to you.

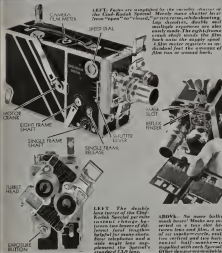
Perhaps, even someday they will be treasured like the quaint old daguerreotypes of grandfather with his beaver hat and sideburns and of grandmother with her hoop skirts. They, too, were what the traveling Daguerren artist simply described as, FIRST CLASS LIKENESSES!

*If it isn't  
an Eastman,  
it isn't a  
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camera matches your  
movie skill and ambition**



# CINÉ-KODAK SPECIAL



**LEFT:** Focus is simplified by the variable character of the Ciné-Kodak Special. Merely move shutter lever from "open" to "closed," for precise, instantaneous, long, shortstop, double and multiple exposures are also easily made. The eight-frame crank shaft sends the film back into the supply spool. A film meter registers in seconds feet the amount of film run or wound back.



**LEFT:** The double lens turret of the Ciné-Kodak Special permits instant change between two lenses of different focal lengths for helpful movie shots. Base telephoto and a wide angle lens equipped the Special's standard G.A.R. lens.

**ABOVE:** No more bulky mask boxes! Masks are inserted in a tray slot between lens and film, and set in instant motion, and, too, vertical and two horizontal half-masks—in supplied with each Special. Other designs available.

**CINÉ-KODAK SPECIAL** gives full scope to your cinematic artistry at 16 mm, home movie cost. This ingenious example of Eastman precision camera craft has all the facilities for trick shots...professional effects...heretofore available only in 35 mm. studio equipment.

A few of the Special's many unique features—in addition to those illustrated—are: Reflex finder, showing on ground-glass screen exact field and focus of all lenses supplied; interchangeable 100-foot and 200-foot film chambers; one- and eight-frame hand crank shafts; motor speeds from 8 to 64 frames a second.

The basic Ciné-Kodak Special with Kodak Anastigmat f.1.9 lens, 100-foot film chamber and set of six masks is priced at \$375. Estimates for adaptation to scientific or technical work upon request. Ask your dealer for the free Ciné-Kodak Special Book.



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## Let's Play Getting Married

Continued from Page 127

Scene 23 Long-shot of a house door. Jimmy and Jane come out, hugging, and walk toward the camera.

Scene 24 Long-shot in a garden—preferably with some trees. The two children enter, and deposit their loads on a bench. Three or four neighbor children—boys and girls—enter, and all start to examine the loot.

Scene 25 Close shot of the little girls getting the bride ready. One of them is pinning a window-curtain on her head for a veil, another is helping her put on some make-up. A third girl gives her a hand-mirror. She looks at herself in it.

Scene 26 Close-up of Jane's face in the mirror, smiling. If possible, use a cracked mirror.

Scene 27 Medium shot of neighbor boys helping the groom dress, putting on an old dress coat, straightening the top hat, etc. One of the little girls brings an enormous flower, which she puts in his button-hole.

Scene 28 Close shot of Jimmy, getting ready for his role as the minister. He has an same old ham-rimmed spectacles, and an old, dark coat of his father's, white gloves, etc. One of the boys is trying on one of Father's dress collars—backwards. Another hands him a battered old umbrella, and Mother's big cook-book, for a prayer-book.

Scene 29 Long-shot of the group putting on the finishing touches. A neighbor boy comes waving a harmonica. The children greet him enthusiastically.

Scene 30 Close-up of Jimmy, speaking.

TITLE "Can you play the Wedding March on your mouth-organ?"

Scene 31 Close-up of neighbor boy, nodding happily.

Scene 32 Long shot of the group. They form a wedding procession, with the little musician leading, playing his harmonica. They wind around, and end up in front of Preacher Jimmy and Bridegroom Bobby.

Scene 33 Close-shot of Jimmy, as the little bride and groom step in front of him. He pushes his spectacles down on his nose, and opens his "prayer-book." As he starts to "read," he suddenly sees something in the background, and stops, looking frightened.

Scene 34 Longer shot of the same. All the children stop, turn, and look embarrassed toward the camera.

Scene 35 Medium long-shot. Mother approaches, carrying something behind her.

Scene 36 Close shot of the minister. He is hiding his "prayer-book" under the seat of his pants.

Scene 37 Close shot of the bride.

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she rubs her behind as though in anticipation of an encounter with a horribush.

Scene 38 Close-up (close angle) of the group—all looking embarrassed.

Scene 39 Medium long-shot of the children (backs to camera) as in the foreground, watching Mother, who enters center, straight into the middle of the group.

Scene 40 Close-up of Mother: she pretends to frown, and then her expression changes to a broad smile.

Scene 41 Same as Scene 39. Mother brings out a bag of cookies and a box of conical popcorn. She speaks.

TITLE "Here's the wedding-feast!"

Scene 42 Close shot of the children, opening the cookie-sack and the conical popcorn.

Scene 43 Close-up of Jimmie. He holds the popcorn-box, and his hand is deep in it. Suddenly he brings out a ring.

Scene 44 Close shot of Bobby and Jane. Jimmie (out of the picture) hands Bobby the ring, and Bobby slips it on Jane's finger.

Scene 45 Long-shot of the group, busy eating the food Mother has brought. Mother is standing there, smiling, and pouring out glasses of lemonade. FADE OUT.

#### THE END

This story can be made very easily anywhere. You can confine it to the three children and Mother, or make room for as many neighbor children as you wish. Plan your locations and properties in advance, so that you can concentrate on getting the pictures of the children while they are interested. As a rule, you will find that you can give the children one rehearsal, and then shoot the scene; often you'll be able to shoot two or more stories together, at a single "take," separating them when you edit the film. Don't waste your time—and the children's patience—by trying to make the inserts in their proper place; you can get them later. Don't make the mistake of over-directing the children: just give them a good idea of what you want, and let them do it their own way—it will be more amusing. This also applies to costuming, the bride's makeup, etc. You can work in a number of added shots in costuming and wedding sequences to take advantage of any "business" that you may think up, or that the children themselves may suggest. Remember, in making these added shots, as well as in filming the story as a whole, get plenty of close-ups, and keep the figures even in the longer shots as large as possible.

A very good idea for the making of this story would be to make it as a part of a costume party for the children, having them all come dressed as grown-ups, make it sort of the fun of the party, rather than work. And remember, you can always get the un-costumed shots at an earlier or (preferably) a later time.

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#### MINIATURE PHOTOGRAPHY AT NIGHT (Correction)

As the "F" value of a lens is found by dividing the focal length of the lens by the diameter of its stop, it is obvious that at f2.0, a 50mm lens would be 25mm or one inch in diameter and not one-half inch as it appeared in the June

issue of this magazine. Fortunately, this oversight did not destroy the intent and purpose of the paragraph, i.e., to show that the short focal length lens on the miniature camera is more easily shaded than is the longer focal length lens on the conventional type of camera. A Grinich focal length lens at f2.0 would be 3 inches in diameter!

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## Shooting Sixty Thousand Caribou

Continued from Page 133

did everyone else who saw the picture "Fish meat, ba' gash! Nice, spring caribou — hey?" Just that little picture conveyed the thought and a situation. I made a close-up of the old cook with his silent smile, and the great wrinkles in his forehead. This showed pleasure, and anticipation, but it didn't indicate that he was a cook. So I had him in his galley, stirring a pot, and slowly shaking his head in despair. At this point, I made a lap-dissolve back to the caribou, as the ship moved away from them, and faded out. I was ending the sequence, and leaving the isolation. Next, a short fade-in of the ship docking at White Horse, where I was to board a train for civilization. Here was where I wanted definitely to end the picture, but what to do? Sunsets were old and conventional, what else definitely indicates the end of a day? Well, after a hard day's work or a long tramp in such a country you feel tired. I felt that way myself — oh, there was my ideal! Into the smoker I went. There was my coat, already assembled a group of picturesque, grizzled old soundtracks. I was lucky to catch one just dropping off to sleep, two or three others snoring away comfortably, and a few others in odd, cramped sleeping-positions. A perfect fade-out.

The picture was released in one 1,000-foot reel. I had shot between three and four thousand feet of film to get it, so that the editor might have plenty of scenes to choose from in building his picture. In making such a picture — and this applies just as forcefully to any type of scenic or travel-film, professional or amateur — the important thing is to get everything — every action, every location, every angle — while you are on the spot and shooting. You can't, as a rule, go back and pick up the shots you've missed, and even if you could, it would be more costly than expending a few hundred feet of film extra for safety.

The picture was, of course, made in 35mm, none of the scenes in the picture were over twenty feet long, and most of them were shorter. This doesn't seem very long, but it was long enough to show what I had to show, and short enough to keep the action moving quickly. The important thing was to have enough different angles to show everything very clearly, and, by the variety of angles, to keep the story moving quickly. The same technique can be used in 16mm or 8mm. In 16mm, for instance, the scenes can be kept under five feet in length — many of them only three or four feet — and if you have plenty of different angles, you'll have a more interesting picture than if you had fewer and longer scenes, made from less inter-

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esting angles. And, by angles, I don't necessarily mean those tricky Russian angles, where your perspective is distorted by an odd viewpoint! Simply the normal succession of long-shot, medium-shot, close-up and extreme close-up, showing the action from different view-

points—approaching, passing, and receding. Don't forget the closer shots, and the different viewpoints, make your footage short on any one scene—but get plenty of short shots of the situation from different angles. You'll be surprised how it will pep up your travel-films!

## FILTER YOUR CLOSE-UPS

Continued from Page 132

depth of focus. This tends to throw the background more or less out of focus, subduing it, and forcibly concentrating the attention on the face of the subject. Naturally, this is doubly true of close-ups made with longer focus lenses, which are always preferable for closer shots.

But—what filters shall we use for improving our close-ups?

This—as always when filtering—naturally depends upon the type of film you are using.

If you use Orfio film, you can choose from the K-1, K-2, Aero 1 and Aero 2 filters—all of which are yellow.

If you use the more nearly panchromatic Panchrome, you may add to this list the K-3 and "G."

With regular Panchromatic film (negative or reversal, and including Cine-Kodak 8mm film) you may choose from any of these filters, and, for extreme cases, add the 23-A to your list.

If you use SuperSensitive Panchromatic film, you will find the yellow "K" series of little value, so your list will include the Aero filters, the "G," 23-A, and perhaps even the 25-A.

These, however, are the possible filters. The list can be narrowed down considerably. For instance, with Orfio film, the K-2 or Aero 1 should be preferable. For Panchrome, the Aero 2 or "G." For regular Panchromatic, the "G" is probably the best all-around filter, while with SuperPan, either the "G" or the 23-A will give delightful results.

In using the red filters (23-A, 25-A, and so on) you will have to avoid using them on subjects with unusually florid faces, as the red filter will sometimes lighten a red face objectionably. On the other hand, a red filter may often be used to advantage to lighten unpleasantly red areas—not only tanning down crude make-up in women, but frequently being able to virtually erase the blighting red scars and birth-marks seen on some faces.

Similarly, these filters can be interesting things to certain shades of hair—especially the more reddish shades. Naturally, the red filters will lighten these shades considerably—often to the point of making hair which, to the eye, seems dark, photograph light. On the other hand, such hair can often be darkened almost jet-black by using a green filter. The green filters, however, are very little

help in most close-up work, as they give a virtually orthochromatic rendition—which is just what we are trying to avoid.

Under some special conditions, filters are almost imperative for close-ups. For example, Glenn R. Kershner, A.S.C., has told me that while he was photographing the Labrador Eskimos, with Commander McMillan's Arctic Expeditions a few years ago, and also more recently, natives of the South Seas, he used either an Aero 2 or a "G" filter continually, to keep the coppery-brown skins of the natives from photographing too dark.

The best rule for this sort of filtering, in the kind of work most standard cinematographers do, is to choose one filter—such as the Aero or "G" for most modern emulsions—put it on your lens, leave it there, and virtually forget it. Use it as an integral part of your camera-and-lens equipment. You'll be surprised how it will improve all of your shots—and, especially, the close-ups.

### Here's How

Continued from Page 126

even more likely, SuperSensitive—film. On these, especially the latter, the 4x yellow filter (designed originally for Orfio film) would make little, if any impression. With modern, panchromatic and SuperPan emulsions, you will need a redder filter, which holds back more of the blue. A filter such as the "G" or the "23-A," or even heavier, is indicated. —Daniel B. Clark, A.S.C.

*I HAVE been told that any given stop, for instance, f 4.5, has the same value, no matter what the type of lens is on which it appears. I have a one-inch and a three-inch lens, yet I notice that when I set the diaphragm of the three-inch lens at f4.5, the opening is much larger than the opening indicated at f 4.5 on my one-inch lens. Why is that? Doesn't the larger opening on the three-inch lens let in more light? Certainly the actual opening of the diaphragm is larger on this lens.*  
—CLINIC, New York.

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length of the three-inch lens, and the low of inverse squares. The indicating number, "14.5," indicates the ratio between the diameter of the opening and the focal length of the lens. The focal length is always regarded as unity, so the aperture-number "14.5" for any lens really means "1/14.5," and is actually a part of an equation, which, in full, is "focal length diameter of aperture 14.5."

Substituting in this equation the focal lengths of any lenses, we see that, in order to maintain the proper mathematical balance, the size of the aperture must increase in the same proportion as the focal length is increased. Obviously, therefore, any given aperture on a long-focus lens will be larger than the same stop on a lens of shorter focus, but it will have the same relative flat photographic value. You will recall, incidentally, that most German lenses are rated as "14.5," etc., rather than "1/14.5."

—Joseph Walker, A.S.C.

*I HAVE been told that good travel films can be made with practically no panorama. To me, this does not seem logical, for I cannot get enough views in my films without panoramas. What do you think?*

—CLIVIC, New York.

For the best results, panoramas should be held to the minimum, if not entirely eliminated. You always get a better picture if you use a stationary shot, with good composition. Also, the human eye does not see so well when the picture is in motion—as in a pan—so you will show more by using a number of short, well-composed static shots than by trying to show the whole thing in a longer panoramic shot. Your picture will likewise have more interest and force with a variety of shorter, more diversified shots.

—John W. Boyle, A.S.C.

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# \$1000 in Cash—\$800 in Equipment

## EQUIPMENT PRIZES

Here are a few of the equipment prizes that will be given in this competition:

EASTMAN KODAK CO. gives a 16 mm. Kodascope Model K-75 Projector.

Value . . . \$235.00

BELL & HOWELL . . . To the highest winner using a Bell & Howell Camera . . . Merchandise to the value of \$125.00 will be given . . . To the second best picture using Bell & Howell camera, merchandise to the value of \$75.00

VICTOR ANIMATOGRAPH CORP. gives a Model S 16mm. Camera with F 2.9 Focusing Mount Dolyer lens.

List Price . . . \$175.00

CRAIG MOVIE SUPPLY CO., of Los Angeles, will give a Senior Revind and Splicer.

Value . . . \$19.50

HARRISON & HARRISON will give one of their universal Filter Holders and a set of 1 1/4-inch Multi-Filters consisting of yellow, red and green filters.

Value . . . \$14.00

AGFA ANSCO CORPORATION gives 12 hundred foot rolls, Super Fox Reversible 16 mm. film to the highest winner using Agfa film. Value, \$94.00 Also 12 one hundred foot rolls Planachrome Reversible film to the second winner using Agfa film. Value . . . \$54.00

SUNNY SCHICK gives one Model MSA Electrophot.

Value . . . \$17.50

THE CALVIN CO., authorized Agfa Laboratory of Kansas City, will give a complete set of Taylor-made 16mm film to the highest winner using Agfa film.

Value . . . \$50.00

## will be given as PRIZES in our Amateur Movie Contest

CLOSING OCT. 31, 1934

This \$1000 will be divided very simply. There will be a grand prize of \$250.00 for the best all around picture. There will be from 10 to 15 prizes in the various classifications of \$50.00 each. Even though you may not win the first prize you would have a chance at the \$50.00 given for the best picture presented in the following classifications: Scenic, Travel, Educational, Scenarios, Home Movies, Kodacolor, Technical and any other classifications which might be brought forth by the entries made.

The American Cinematographer reserves the right not to declare a prize for any class if in the opinion of the judges there is not a picture submitted sufficiently good to be classed a prize winner.

If you intend to enter this contest, please send coupon on this page so that we might send you official entry blank.

Please send me one of your official entry blanks. I intend to enter a (16mm. 8mm. 9 1/2mm.) picture in your 1934 contest. I understand my entry must be in your office not later than October 31, 1934.

Name \_\_\_\_\_

Street \_\_\_\_\_

Address \_\_\_\_\_

## A M E R I C A N CINEMATOGRAPHER

6331 Hollywood Boulevard

Hollywood, California

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Meets the  
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